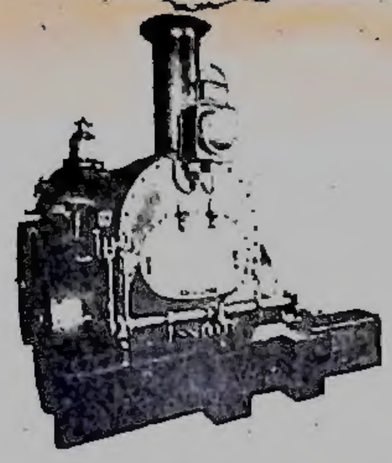
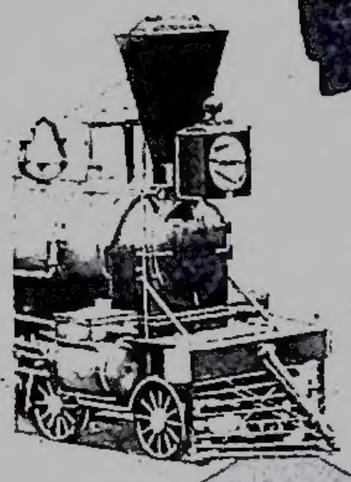
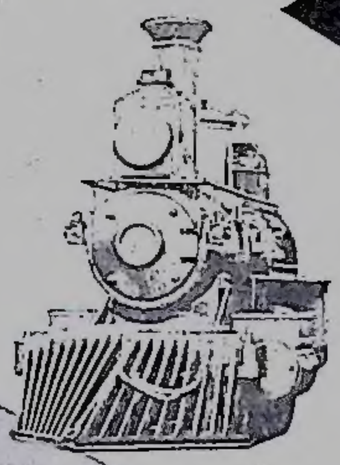
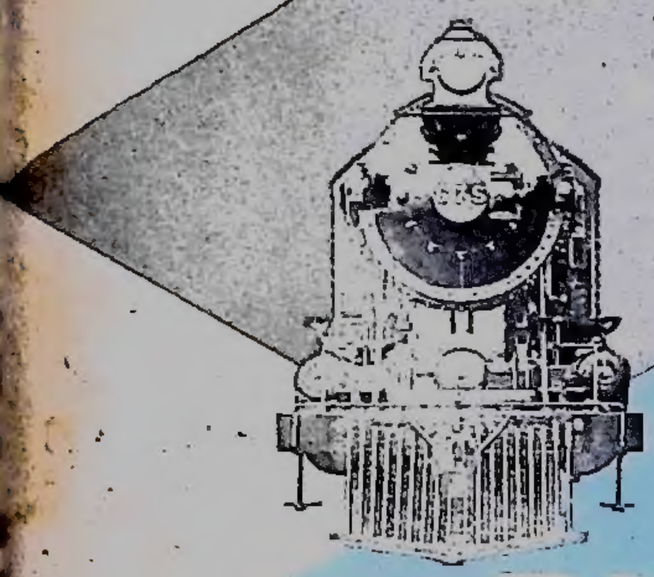
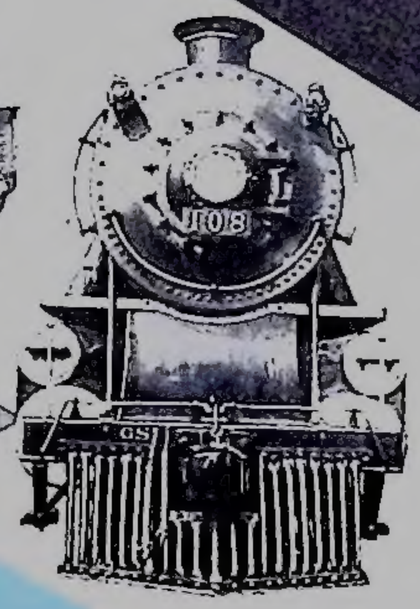
THE READING

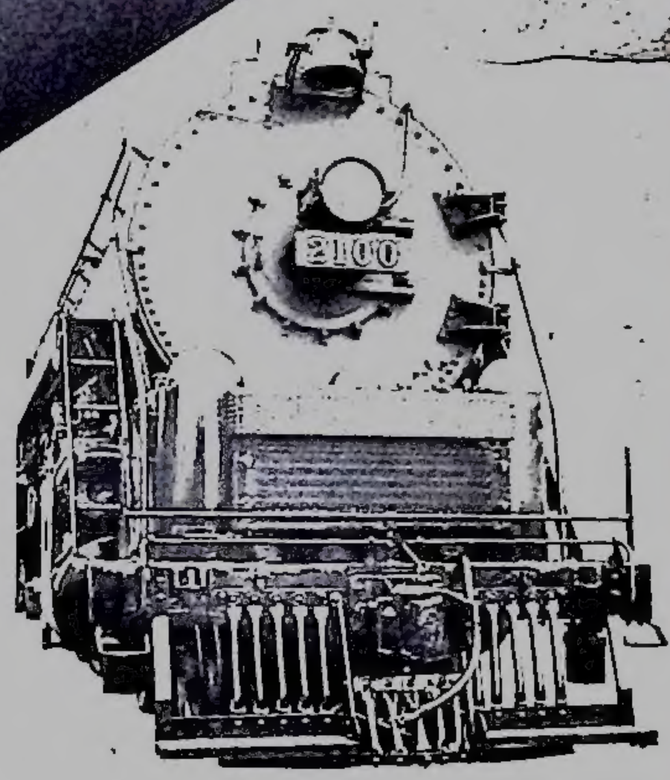






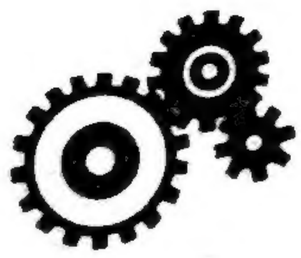


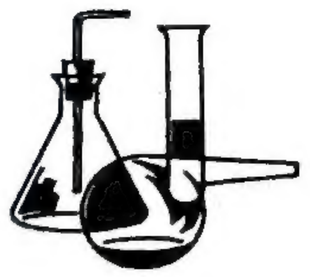


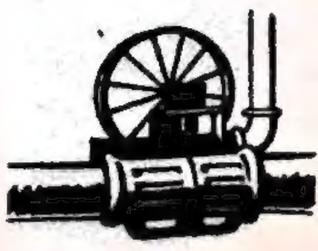


BUILDING A MODERN RAILROAD

NEWBERRY JCT.
MUNCY
MILTON
DANVILLE
RUPERT
QUAKAKE
TAMANEND
SHENANDOAH
HAUCKS
SUNBURY
SHAMOKIN
MT. CARMEL
MAHANOY CITY
TAMAQUA
DORNSIFE
POTTSVILLE
TREMONT
SCHUYLKILL HAVEN
PORT CLINTON
LYKENS
PINE GROVE
INDIANTOWN GAP
SINKING SPRING
LEBANON
RUTHERFORD
HERSHEY
HARRISBURG
HUMMELSTOWN
MT. HOPE
CARLISLE
CAMP HILL
STEELTON
MIDDLETOWN
JOANNA
MANHEIM
LURGAN
CARLISLE JCT.
SHIPPENSBURG
LANCASTER
COLUMBIA
COATESVILLE
PENNSYLVAN
GETTYSBURG
MARYLAND



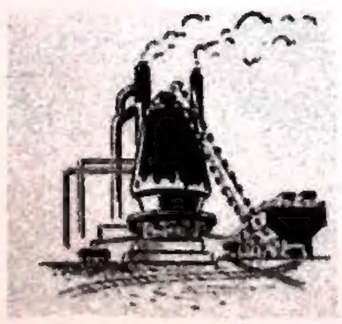


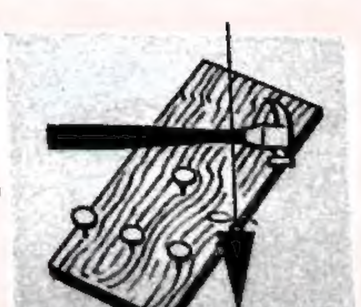


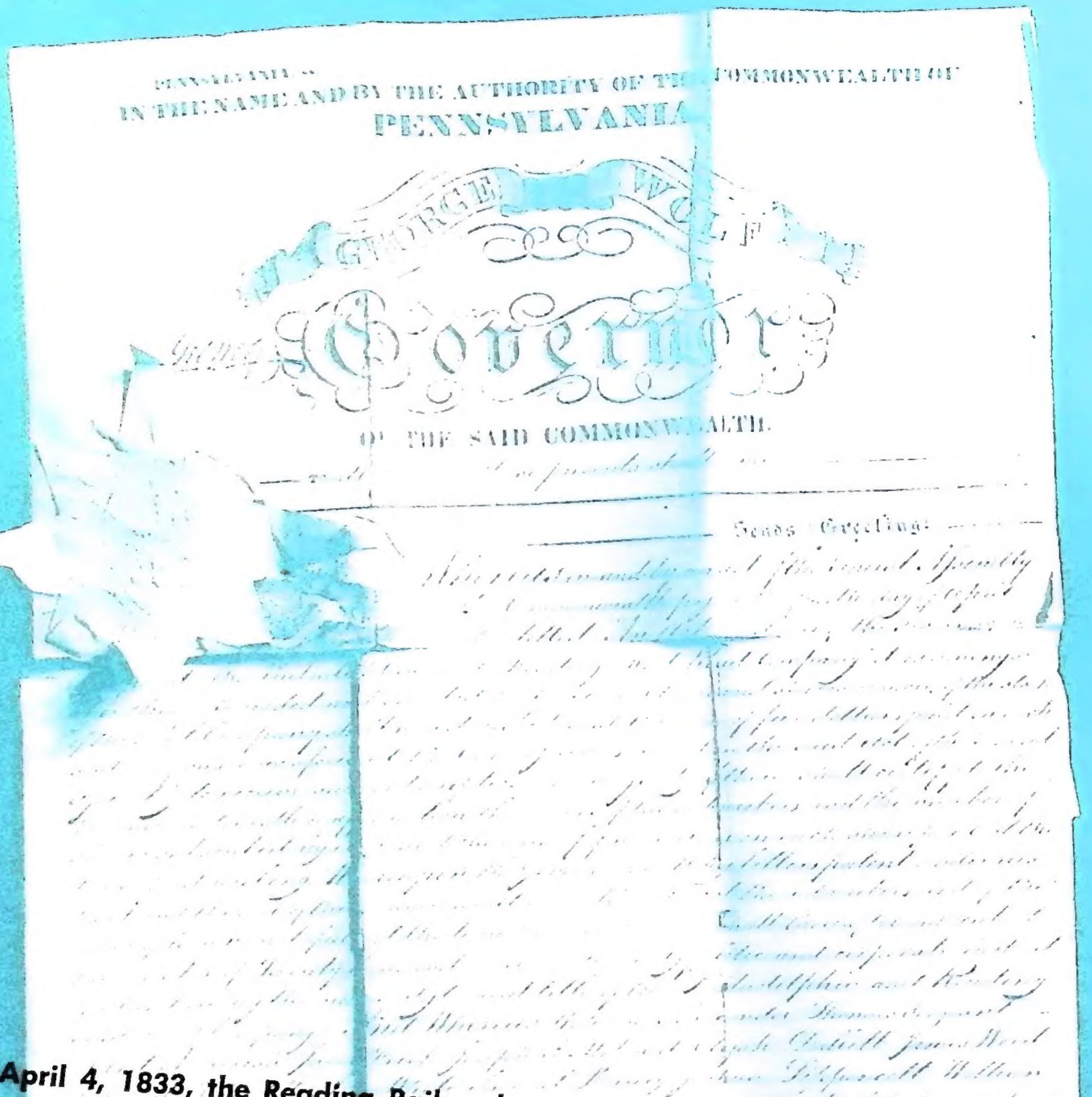
N. Y.

NEW JERSEY

BEST
CATASAUQUA
BETHLEHEM
CHAPMAN
ALLEN TOWN
TOPTON
ALBURTIS
BARTO
POTTSTOWN
LANSDALE
DOYLESTOWN
NEW HOPE
WEST TRENTON
LAWRENCEVILLE
NEWTOWN
TRENTON
FAIRLESS
PHOENIXVILLE
NORRISTOWN
BRIDGEPORT
CONSHOHOCKEN
PORT RICHMOND
PHILADELPHIA
CAMDEN
CHESTER
MARCUS HOOK
THOMPSON'S POINT
PIGEON POINT
CARNEYS POINT
GLASSBORO
WINSLOW JCT.
P.R.S.L.
SALEM
VINELAND
BRIDGETON
LEESBURG
ATLANTIC CITY
SOMERS POINT
OCEAN CITY
BOUND BROOK JUNCTION
PORT READING
WESTON-MANVILLE
BELLE MEAD





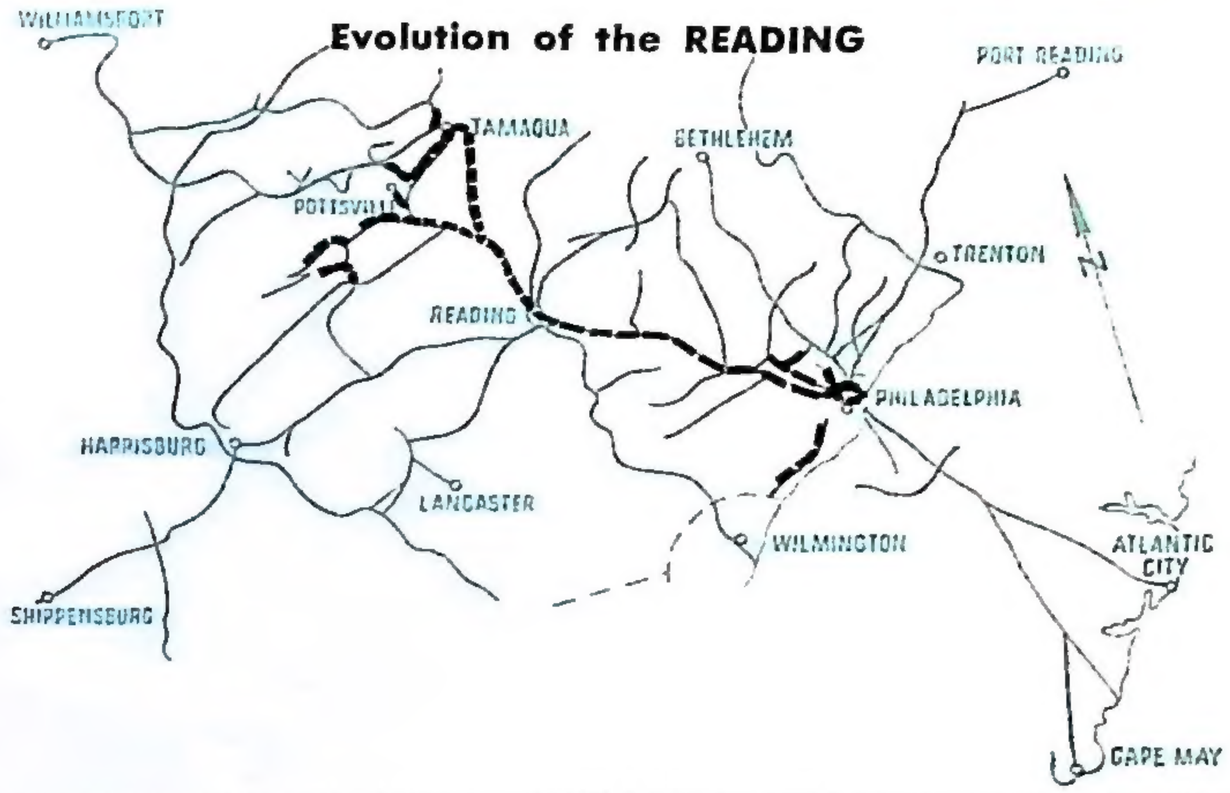

PENNSYLVANIA ss.
IN THE NAME AND BY THE AUTHORITY OF THE COMMONWEALTH OF
PENNSYLVANIA
GEORGE WOLF
Governor
OF THE SAID COMMONWEALTH.
Seeds Greeting:

On April 4, 1833, the Reading Railroad was chartered by the Commonwealth of Pennsylvania. Today—one hundred and twenty-five years later—the Reading makes plans for the future. It has passed from the age of the wood-burner, through the dramatic age of steam, to the age of the powerful diesel. Just as it looked forward to the challenge of expanding internal improvements in 1833, the Reading today looks forward to the challenge of automation and centralized traffic control. This book records the highlights of the Reading past, the character of the Reading today, and the hopes of the Reading for the future. It is dedicated to all those whose faith in good works, and work in good faith, have made the Reading one of America's forward-looking railroads.

Evolution of the READING

1825-1850

The Reading Railroad was born in an age when steam power was a novelty and the approved mode of travel was by canal and stagecoach. Not until a ninety-three-mile route was carved out of the Pennsylvania countryside, laid with iron track and proved by daily use, was it certain that the Reading venture would succeed. But within ten years the road was completed and its capacity for the transportation of anthracite had far surpassed that of the canals.

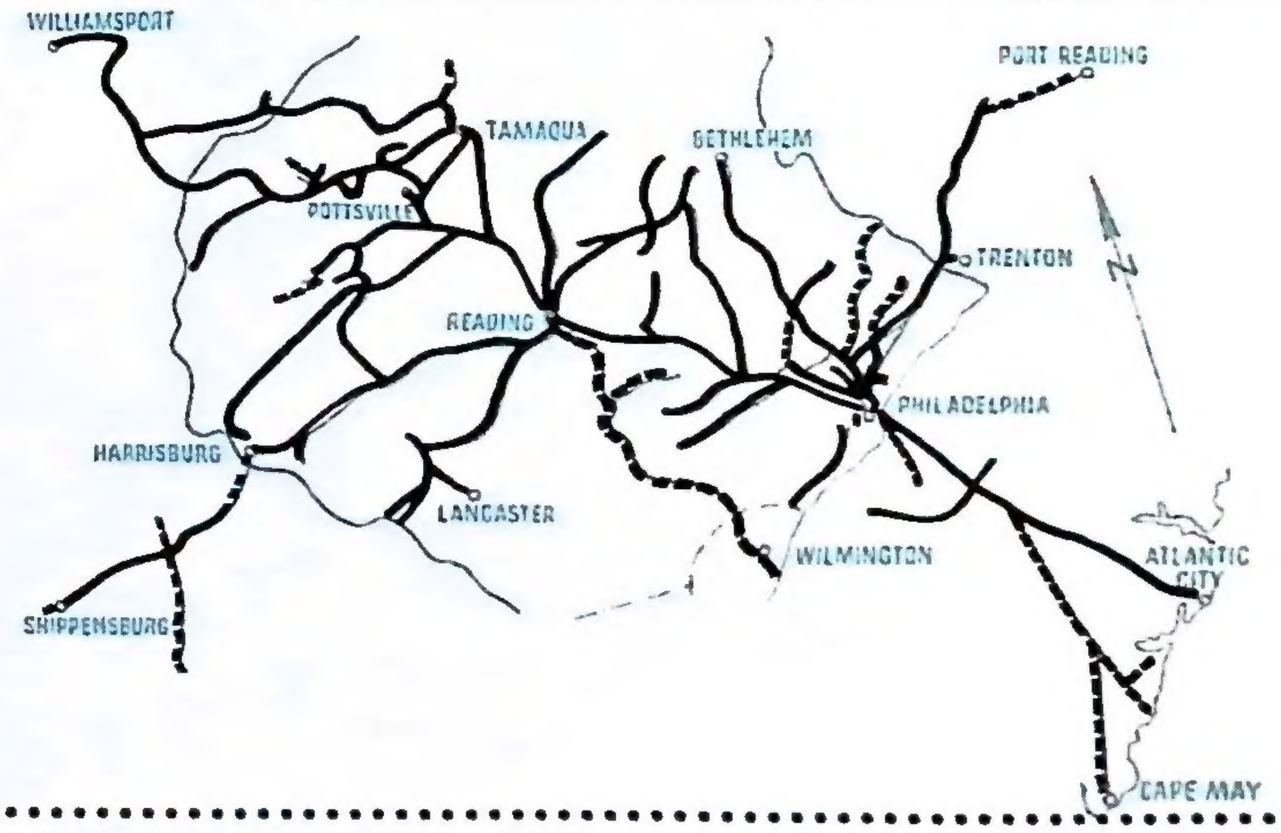


1850-1875

The era that saw the opening of the West by rail was an era of railroad fever in Pennsylvania. By acquiring lateral coal railroads and mining branches, and by encouraging the wide expansion of rail service to important population centers like Harrisburg, Bethlehem and Philadelphia, the Reading became a "bridging" railroad. Able to serve the needs of industrial Pennsylvania, and the demands of markets throughout the eastern United States, the Reading became one of the largest corporations in the world.

1875-1900

During years of economic stress, when American industry was reorganizing to make this country a nation among nations, the Reading became a diversified railroad. It established East-West connections near Harrisburg and Williamsport, and North-South connections at New York and Wilmington. Excursions to important resort centers like Atlantic City and Eagles Mere in the Poconos made the Reading an intimate partner in the shaping of American society. By the outbreak of World War I, the Reading had proved that it was able to provide a lifeline of supply services for the entire United States.



1900-1958

The last several decades of Reading Company history reflect the Company's continued leadership in applying the results of technological research in modernizing its plant and equipment, and in improving its service to shippers and receivers of freight. As a result, the Reading is one of the most progressive railroads in the Nation. And to meet the future needs of the area it serves, the Reading is continuously at work seeking even newer and better facilities of all kinds.

——— Reading at beginning of period.
- - - - - - Railroads constructed during period.

PRESIDENTS

ELIHU CHAUNCEY 1834-1842

A patient but determined man, New England born, Chauncey brought to the Philadelphia and Reading a wide knowledge of banking and public opinion, and helped to preserve the young railroad during its most trying years.

WILLIAM F. EMLEN 1842-1843

Emlen was a Princeton graduate and Philadelphia business man. He later became president of the Philadelphia Stock Exchange.

JOHN CRYDER 1843-1844

Cryder was active president of the railroad for only ten months, during which time he tried to solicit funds for the railroad in England.

JOHN TUCKER 1844-1856

Assistant Secretary of War during the Civil War, Tucker was the greatest president of the Philadelphia and Reading in the nineteenth century. Expansion of the railroad's facilities and development of its anthracite trade were primarily the result of his long-range planning.

ROBERT D. CULLEN 1856-1860

Cullen represented the most influential banking house in England, the McCalmonts, and it was during his administration that the large-scale absorption of lateral lines was begun.

ASA WHITNEY 1860-1861

One of the first civil engineers to become a president of the Philadelphia and Reading, Whitney later operated his famous car wheel business at 15th and Callowhill Streets, Philadelphia.

CHARLES EASTWICK SMITH 1861-1869

Civil War president of the Philadelphia and Reading, Charles E. Smith was the founder of the Fairmount Rolling Mill, and later became an outstanding Philadelphia botanist.

FRANKLIN B. GOWEN 1869-1884

Gowen's years were troubled years, during which the Philadelphia and Reading developed the largest valuation of any corporation in the world. An incredibly magnetic man, he drew to his circle such names as Pinkerton, the detective, and Morgan and Drexel, financiers.

FRANK S. BOND 1881-1882

Elected president to replace Gowen's contested leadership, during years of great trial.

GEORGE DeBENNEVILLE KEIM 1884-1887

A member of the famous railroad family of Reading, Keim helped to guide the Philadelphia and Reading through a period of financial stress. He was considered one of the greatest land-title attorneys in Pennsylvania.

AUSTIN CORBIN 1887-1890

Corbin was one of many young men who went west in the 1850's and there developed a land and banking company. It was through his later efforts that Coney Island, New York, became a famous resort.

ARCHIBALD A. McCLEOD 1890-1893

Starting out as a soda-pop salesman in Minnesota, McCleod was one of the most dynamic railroad men of the century. It was through his efforts that the Reading Terminal was constructed.

JOSEPH SMITH HARRIS 1893-1901

Harris, who served during the Civil War as commander of the *Sachem*, flagship of Admiral Farragut's Mississippi fleet, was a noted Pennsylvania mining and anthracite engineer.

GEORGE BAER 1901-1914

Baer, a member of the Pennsylvania Volunteers in the Army of the Potomac during the Civil War, was one of Reading, Pennsylvania's, most eminent citizens. Lawyer and philanthropist, he was an outstanding public speaker.

THEODORE VOORHEES 1914-1916

Voorhees was a descendant of one of the original Dutch families of New York. A graduate of Rensselaer Polytechnic Institute, he became a famous operating engineer. He pioneered in the development of high-speed railroading.

AGNEW DICE 1916-1932

Leader of the Reading during World War I and the early years of the depression, Dice's administration was marked by the introduction of electrification on the Reading, and the construction of North Broad Street Station.

CHARLES H. EWING 1932-1935

Ewing devoted fifty-two years to the Reading. During World War I he acted as Federal Manager of the Jersey Central and Reading Lines, on behalf of the United States.

EDWARD W. SCHEER 1935-1944

During Scheer's administration, extensive modernization programs were undertaken, the most significant of which was the construction of the silver streamliner, the *Crusader*.

REVELLE W. BROWN 1944-1952

An outstanding civic leader, Brown initiated a program of large-scale dieselization, and adaptation of the Reading Railroad System to the electronic age.

JOSEPH A. FISHER 1952-

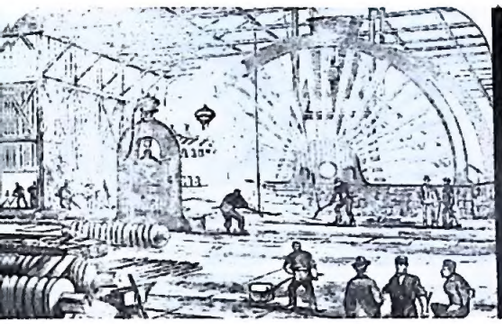
Currently the president, Mr. Fisher is working with the Reading team to keep the railroad in step with modern technology and progressive economic thought.

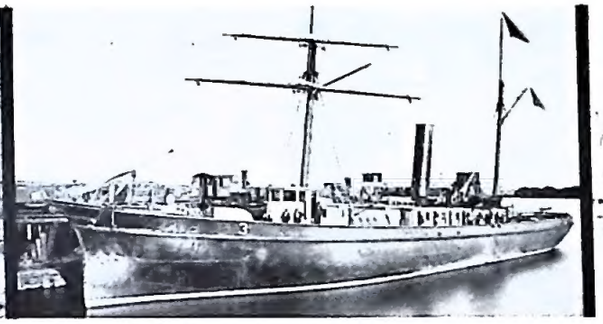
1811	**April 2**	Union Canal Company formed. It held the oldest charter of any predecessor company, representing a union of the original Delaware and Schuylkill and the Schuylkill and Susquehanna Canals, chartered 1791-92. The Union Canal was leased by the Philadelphia and Reading in 1862.
1826	**February 20**	Little Schuylkill Navigation Railroad and Coal Company was organized. First railroad built under the same leadership as the Philadelphia and Reading—Isaac Hiester and George DeBenneville Keim. It was leased to the Philadelphia and Reading in 1863.
1828	**March 24**	The Mine Hill and Schuylkill Haven Railroad chartered. Oldest specific charter for a railroad by a predecessor company. It was leased by the Philadelphia and Reading in 1864.
1829	**June 6**	The first line of any predecessor system was opened. The Schuylkill Valley Navigation and Railroad Company and the Mill Creek and Mine Hill Railroads, using horse power, began operation.
1830	**August 21**	Schuylkill Valley Navigation and Railroad Company provided the first regular train service by any predecessor company, from Pottsville to Tuscarora with stage connections to Mauch Chunk.

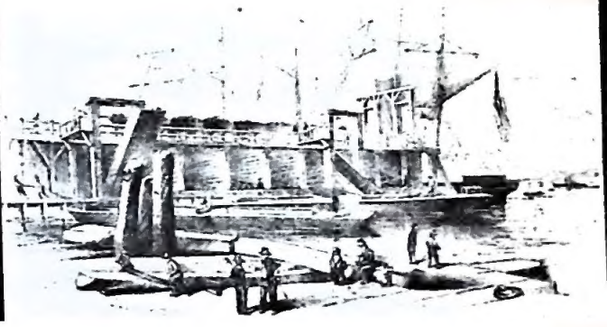
CHRONOLOGY

1831	**May 9**	"Address to the Friends of the Rail-Road From Philadelphia to Reading, proposed to be located on the West Side of the River Schuylkill." Earliest mention of a railroad on specific location of the present Reading system.
1832	**November 23**	The Philadelphia, Germantown and Norristown Railroad operated the first locomotive over any part of predecessor system: *Old Ironsides.*
1833	**April 4**	The enabling act for the Philadelphia and Reading Railroad was passed by the Legislature of Pennsylvania.
	September 6	First publication by the Philadelphia and Reading, "A Report from the Friends of this Improvement."
	December 5	Signing of the charter of the Philadelphia and Reading Railroad by Governor Wolf.
1834	**November 22**	First stockholders' meeting of the Philadelphia and Reading Railroad convened at Philadelphia.
1838	**May 1**	First train, pulled by the Philadelphia and Reading locomotive, *Rocket,* from Reading to Pottstown.
	July 16	Regular service on the Philadelphia and Reading began.
	November 3	First Philadelphia terminal of the Philadelphia and Reading opened at Broad and Cherry Streets.
1839	**March 12**	*Neversink,* Baldwin locomotive built in 1836, became the first locomotive in regular service on the Philadelphia and Reading.
	December 5	The Philadelphia and Reading opened from Reading to Philadelphia. The locomotive for the maiden trip was the *Gowan & Marx.*
1842	**January 1**	First train ran from Pottsville to Philadelphia, pulled by the locomotive *Hichens and Harrison.*
	May 17	Port Richmond on the Delaware for trans-water shipment of coal was opened.
1843-44		A double track was laid over the entire length of the Philadelphia and Reading.
1847	**March 15**	Philadelphia, Reading and Pottsville Telegraph Company, the oldest telegraph company in the Commonwealth of Pennsylvania, was formed under the sponsorship of the Philadelphia and Reading Railroad.
1858	**March 20**	First merger of the Philadelphia and Reading with one of its predecessor lines, the Lebanon Valley Railroad.

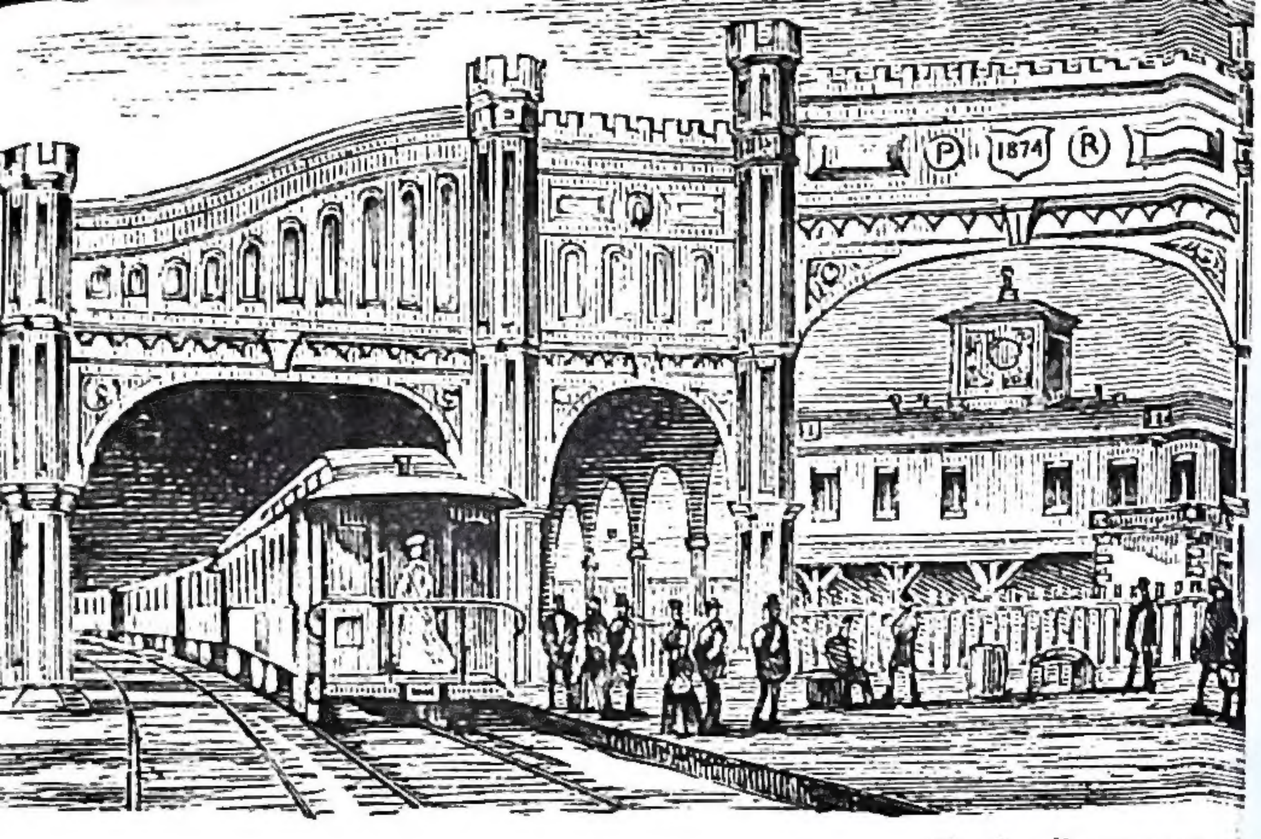
1860	August 31	The Philadelphia and Reading opened its second Philadelphia Terminal at Broad and Callowhill Streets.
1862		The Philadelphia and Reading exercised its right to own vessels and procured three iron-screw propeller vessels: the *Philadelphia,* the *Reading* and the *Pottsville.*
1871	January 17	Formation of the Philadelphia and Reading Coal and Iron Company, the largest anthracite mining corporation in the world, and affiliated with the Philadelphia and Reading Railroad through the efforts of Franklin B. Gowen.
1873		Franklin B. Gowen announced plans for the construction of a shipyard at Port Richmond, thus making the Philadelphia and Reading a combination mining, transportation and shipping industry.
1889	July	Port Reading, New Jersey, constructed to serve the coal trade in the vicinity of New York City.
1893	January 29	Reading Terminal, Twelfth and Market Streets, Philadelphia, opened.
	November 30	Formation of the present Reading Company, first as a proprietary, then as an operating company. The Philadelphia and Reading was absorbed by the new corporation.







1896	August	Pennsylvania Subway, carrying the freight tracks of the Reading under Broad and Callowhill Streets, Philadelphia, opened.
		Newberry Junction, near Williamsport, developed as a car classification center.
1898		Rutherford classification yards, five miles from Harrisburg, constructed.
1919		First telephone dispatching service initiated by the Reading from Philadelphia to Bound Brook and from Reading to Harrisburg.
1924		The Little Schuylkill Railroad roadbed was realigned at Port Clinton for the first time in ninety-five years.
1927		Reading Company ordered its first diesel tug, the *Harold J. Taggart.*
1928	January 14	Port Richmond Grain Elevator opened.
	October 25	Electrification of Reading suburban service. The first train ran July 26, 1931.
1932	November 23	New Jersey lines of the Pennsylvania and Reading Railroads were unified as the Pennsylvania-Reading Seashore Lines.
1937	December 13	The *Crusader,* first streamliner in the East, made her maiden trip to New York.
1947		The Reading Company won the Harriman Safety Award, culminating a program of safety that began in 1910.
1950	December	A program of modernization at Rutherford Yards included the installation of car retarders.
1952	April	The Morrisville Branch of the Reading Company, serving the Fairless Steel Works, was opened.
1953		Fifty-one diesel locomotives were purchased this year, initiating a large-scale Reading modernization program.
1955	January 1	Trailer-on-flat-car service was announced.
1956		The Reading Company announced a "rail-conditioning" service to reduce slipping on the rails, a long-standing railroad problem. Continuing its program of improvement, the Company placed 2,000 new freight cars in service and placed an order for 1,500 additional cars.
1957		The Reading carried on a wide-scale improvement of Port Richmond, opening new heavy-lift facilities on Pier "G," and began expansion of coal and ore-handling capacity.
1958		Installation of Centralized Traffic Control was carried forward.



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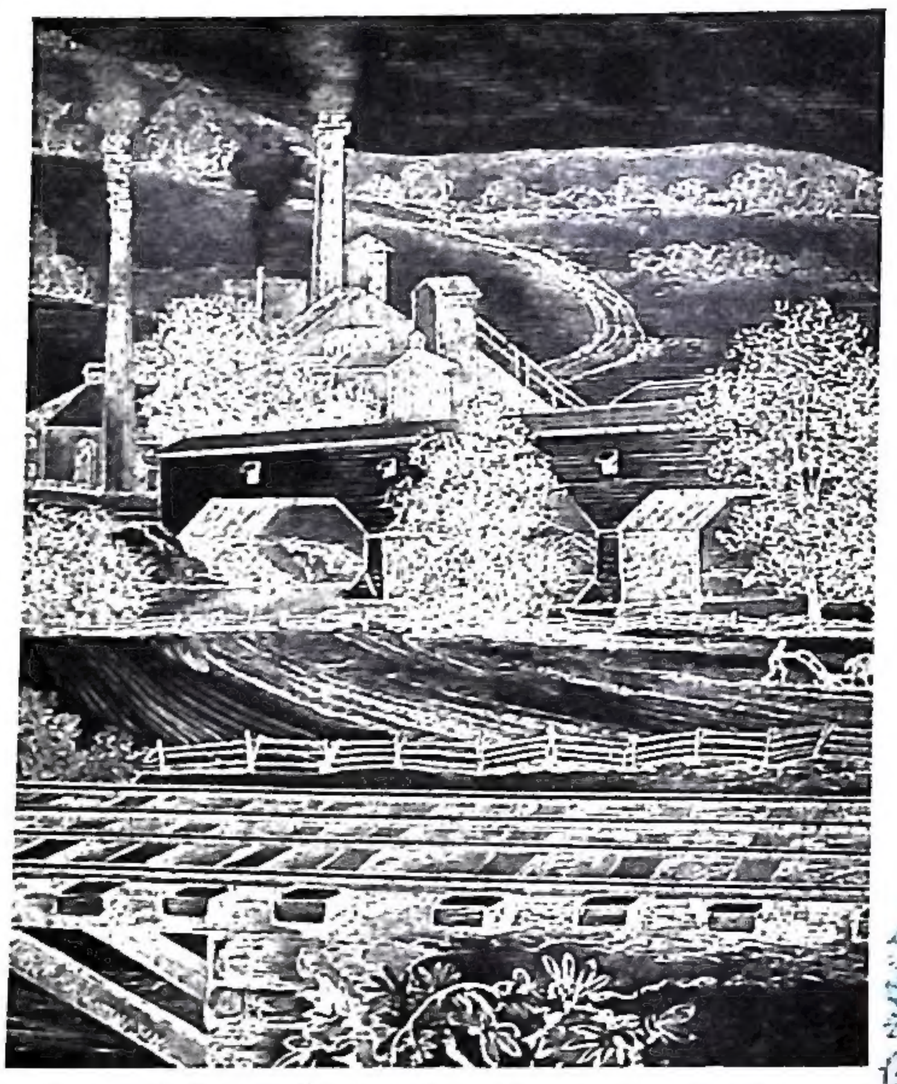

Some of the Reading's first customers were the iron mills that dotted the Pennsylvania countryside. These made the "chairs" and the rails essential for the construction of the "high iron," or main line track.

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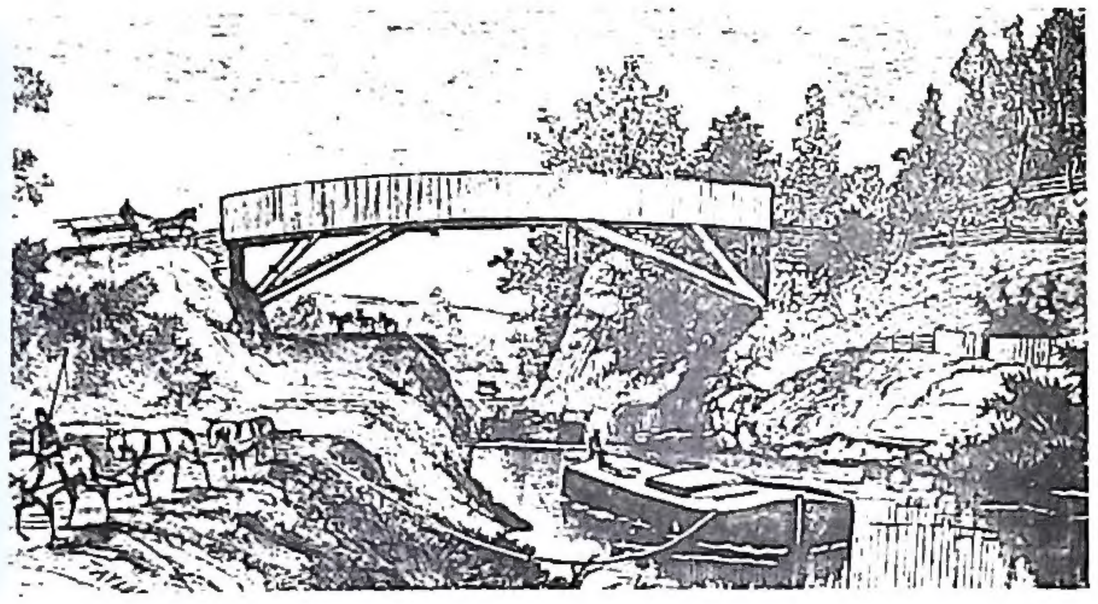


In 1833, canal boats averaged loads of thirty to thirty-five tons, and consumed twelve to fourteen days for a round trip from Pottsville to Fairmount.

A Dream for the Valley of the Schuylkill

Early in 1833 the route of the Reading was still a dream, a dream for the valley of the Schuylkill. For every man like Stephen Girard and Friedrick List, like Moncure Robinson, Edward Biddle and William Strickland, men who envisioned rails for America, there were still many who waited patiently for every spring so they could send to market by mule and horse and barge, the harvest of their toil. Over the Schuylkill Canal, which threaded its way southeast from the foot of the mountains to the green banks of Fairmount, came the lime, the lumber, the grain, the soap-stone, nails and shingles. Dams might break from a freshet, the channel turned in the night by an angry farmer, the locks crushed by a thaw, but this was the way for the enterpriser of the thirties. If he had looked at the growing number of barges heavily laden with coal, he would have seen a revolution stirring.

Railroads came to America because it was time for them. George Stephenson in England had set the little locomotive, the *Rocket,* in motion along the track of the future. In New England, Gridley Bryant was pulling granite for the Bunker Hill Monument over his gravity railroad, and, in Pennsylvania, names like Danville and Pottsville, Mill Creek and Mine Hill, Mine Hill and Schuylkill Haven, Philadelphia and Columbia—words like "grade," "curvature," "inclined plane," "cut" and "crossing," were becoming the coin of daily conversation. These were the "Rail Roads" and the stuff of railroading. Early in the spring of 1833, while canal barges still lay idle at the docks at Pottsville, another way was being born for the Schuylkill, a way of rails and ties, of depots and driving wheels.

A Revolution Smoulders

Railroads came to Pennsylvania because here, too, it was time and there was a need. Anthracite came down slowly from the hills and warmed the blood of the railroad men who could not wait for spring and a thaw and the opening of navigation. The hard "stone" coal was more than a curiosity by 1830. It burned on the grates

in Philadelphia homes and in the furnaces and mills of Berks and Schuylkill Counties. From the banks of the James River in Virginia, young Moncure Robinson, civil engineer, had seen the promise of both the mountains and the sea. But what is more, he saw a way to wed them with a band of iron. He brought his vision to the Commonwealth of Pennsylvania, and with the help of Philadelphia men like Edward Biddle, and Reading men like Isaac Hiester and George DeBenneville Keim, he forged his vision into reality.

A railroad for the Schuylkill Valley had long been coming. The east branch of the Schuylkill River cut through the heart of the Schuylkill County anthracite fields and connected at Port Carbon with the busy water route to Philadelphia. Efforts to release the wealth of the Schuylkill region by rail had been made early. Railroad projects to connect with the Schuylkill Canal, canals to connect with the rivers Susquehanna and Delaware, and rivers to connect with cities were an old Pennsylvania dream. The Little Schuylkill East Branch Navigation, Railroad and Coal Company, chartered in 1826, cut east through the narrow gorge of the branch river, opened the southern coal field and gave birth to the booming towns of Port Clinton and Tamaqua. But as Moncure Robinson sat in his office at Port Clinton, he thought only in terms of a connected railroad, a railroad not to the canal—but instead of a canal. Biddle and Hiester and Keim thought of this too. From the mountains to the banks of the Delaware River the land was predominantly down grade. An engineer could balance grade and weight and motive power and work out a formula for triumph. The right power, the right rail, the right road and the right men—and the ice of winter would be only the ice of winter and no longer a formidable barrier.

Under Discouragements—a Railroad Is Born

On April 4, 1833, an act of the Legislature of Pennsylvania approved the construction of a railroad along the banks of the Schuylkill, and the Philadelphia and Reading was born.

As the first president of the Philadelphia and Reading wrote to his agent in London that, "We will succeed under all discouragements," he could hear powder blasts at Black Rock Tunnel—he could hear the sarcasm of voices saying, "It will never run"—and he could feel the malice of canal advocates who worked hard to make the facts about canal transportation seem right and the facts about rail transportation seem wrong. Dependent on a Philadelphia bank for financial help, at a time when payment of bills meant success or a sheriff's sale, Philadelphia and Reading men watched the bank close. Prepared for the grand opening of the railroad's port across from Petty's Island on the Delaware, they watched their new bridges leading to it go down in a fire set by vandals.

But at the controls of the Philadelphia and Reading were brilliant and determined men. Wirt Robinson, Gustav A. Nicolls, Richard and John Osborne, following the giant strides of Moncure Robinson, built the Philadelphia and Reading with muscle and hope. Moncure paced off the boundaries of the Richmond district waterfront, surveyed the ascending and descending grades of a ninety-three-mile route with eye and transit, and laid out a right-of-way with such perfection that it remains to the present date, virtually unchanged.

Nicolls and Osborne, planning for permanency and change at the same time, built the bridges, culverts, the turntables, and altered wheel and car to meet each special need. Within ten years the road was built. People raised their glasses to the new "Rail Road" in Pottstown, Pottsville and Reading. They gasped at the courage of the men, and they marvelled at the strength of the *Gowan & Marx,* the *Rocket,* the *Hichens and Harrison.*

Down at Port Richmond, the high loading trestles shuddered under the burden of car after car of Pennsylvania coal. By 1844, only two years after the opening of the entire line, coal tonnage of the railroad was 42,843 tons greater than that of the canals, and Charles Ellet, staunch defender of the old Schuylkill Canal, was muttering, "A large part of the coal trade has been carried upon the Reading Railroad." One great era was closing, and another was just beginning.

The Black, Hard King of the Mountain

Anthracite was not just a product of nature. It was a way of life, a form of energy. Like the valleys and mountains over which the Philadelphia and Reading passed, anthracite created its own perils and problems. It excited land fever and speculation. It created empires and towns. It made and ruined fortunes. The mining and transportation of Pennsylvania hard coal was a serious challenge to any railroad that sought its control.

Coal was of the mountain, and the mountains of Pennsylvania ran like great steps up to the borders of New York and west to the Ohio River.

The Schuylkill Canal hauled over three million tons of anthracite between 1826 and 1832. This scene near Reading shows the canal in quieter days after 1844, when the Reading was hauling a greater per cent of the tonnage.

The Phoenixville Tunnel, blasted out by deadly black powder between 1835 and 1837, is 1,932 feet long, and still in use.

The gentle Conewago range north of Pottstown soared into the Kittatinny and Pocono regions, running from Easton west toward Reading. The South Mountain reached out from Schuylkill Haven toward the Broad Mountain running northeast from Shamokin. And the Alleghenies stood between northern Pennsylvania and the Mohawk Valley of New York State. The three anthracite fields, the south, middle and Wyoming, cut across these mountain chains, and the chains linked together a land of many valleys—the Williams, the Susquehanna, the Delaware, the Lebanon and the Schuylkill.

Trestles for the valleys, tunnels for the mountains, bridges for the rivers and a locomotive with the power and the control to run both uphill and down, demanded men of ingenuity and imagination. Robinson, the surveying engineer, prescribed that the ascending or "up" road should be graded so that the same number of cars coming down, loaded with coal, should be able to return up to the mines empty. So it was ordered and made. This in turn meant that the braking power of the locomotive, the down grade power, was as important as the sheer pulling power of the climbing locomotive. Thus it was that the *Gowan & Marx* hauled an unheard-of 80 cars and combined weight of over 600 tons, at 12 miles an hour, down from Reading to Philadelphia on December 5, 1839.

A Road of Perpetual Motion

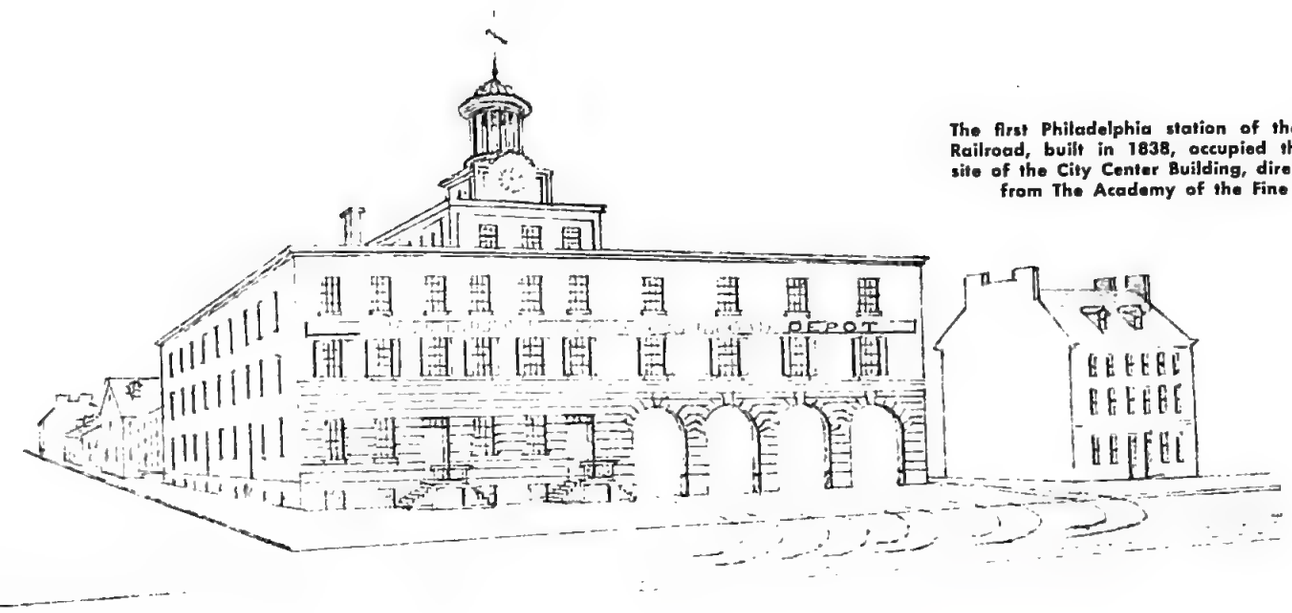
When John Tucker became president of the Philadelphia and Reading in 1844, anthracite, king of the mountain and source of Pennsylvania's growing industrial might, demanded an expanding transportation system. The success of the Philadelphia and Reading depended on constantly turning wheels. To assure an endless supply of coal, Tucker leased mines. To assure an endless supply of cars, he leased over fifteen hundred in one year. To assure an endless flow down the Delaware to New York and New England markets, he expanded the wharves at Port Richmond. To assure a route of perpetual motion, he began to look at other railroads—the laterals, the feeders, the railroads nine miles long, twenty miles long, and the railroads beyond the mountains, moving west. In the forties and fifties, all railroads were looking and moving west—west to Lake Erie, to Chicago, to California.

King Coal made not one railroad, but many. And the route of the Philadelphia and Reading was not one route, but many. The Reading of today represents the gradual consolidation of over one hundred and thirty-three transportation systems. Thus was the dream of a connected system of railroads—Moncure Robinson's dream of 1833—realized. The early railroad of the nineteenth century, ninety-three miles in length, became the present Reading which serves over five thousand, five hundred and twenty-four miles of inland Pennsylvania, New Jersey, New York and Delaware. And as early as 1883, fifty years after its founding, the Philadelphia and Reading was hauling approximately eight million tons of coal a year.

A Giant Tames a Giant

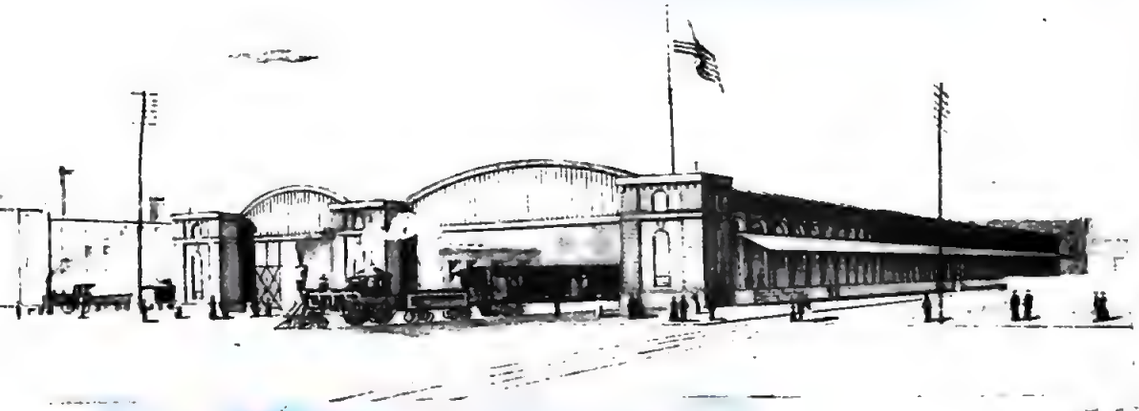
Coal must be brought out of the mountain, sent down to the valley, and shipped out to the markets. The route of the Philadelphia and Reading ran past the inclined planes of Mahanoy and Gordon, the breakers at Silver Creek and Locust Summit, and the sixteen-hundred-foot shaft which had been driven into the Mammoth vein of anthracite at Pottsville. The Philadelphia and Reading rolled out along the trestle of Pier 18, Port Richmond, and the coal tumbled down the chutes into the holds of barges, schooners and colliers. By 1875, the Philadelphia and Reading's victory over King Coal was complete. Sixty-two mines were leased by the Philadelphia and Reading Coal and Iron Company, an affiliate. Fifteen thousand coal cars formed an unbroken conveyor system from the heart of Pennsylvania to the river Delaware. Sixteen Philadelphia and Reading Company colliers, the first to ply the Atlantic waters in the coastal coal trade, sailed to Baltimore, New York and Boston.

The Philadelphia and Reading became the largest anthracite carrier in the United States—in the world—because its working leaders and working hands knew that they must make the sturdy locomotives sturdier, the powerful driving wheels more powerful. They knew they must find a better fuel for a good fuel, build a stronger bridge for a strong bridge, lay a heavier rail for a heavy rail, provide more cars than just enough. They knew that the Philadelphia and Reading's future would be hammered out in the shops, tamped down in the laying of ties, secured in the bolt of a wheel.

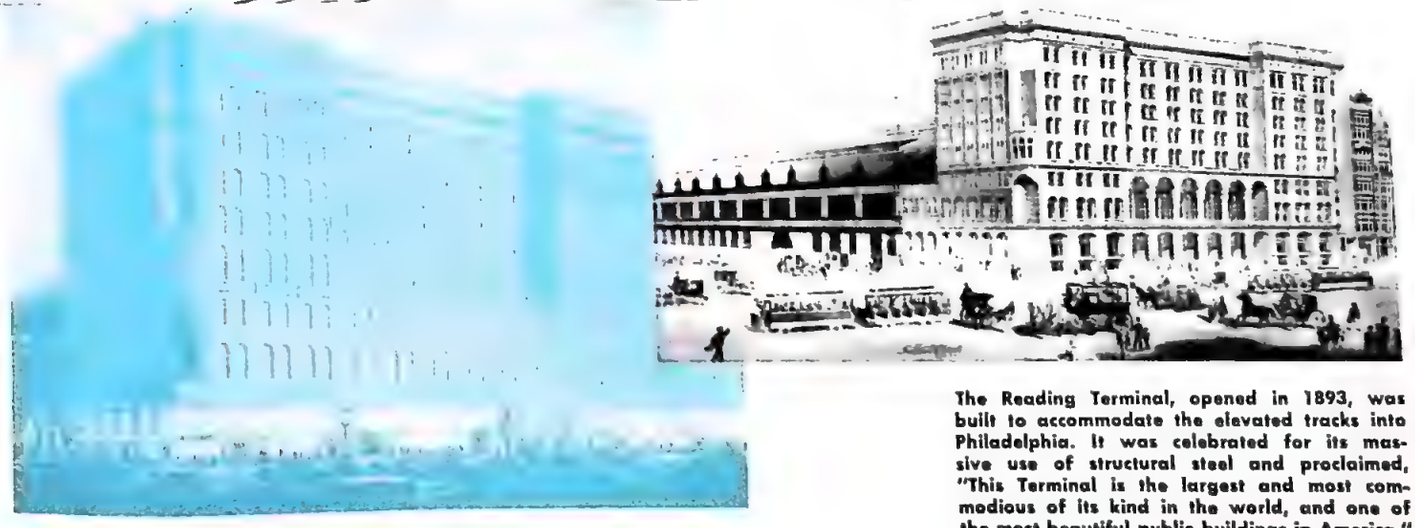


The first Philadelphia station of the Reading Railroad, built in 1838, occupied the present site of the City Center Building, directly across from The Academy of the Fine Arts.

This house-type structure with adjacent shed was located opposite the present site of the Broadwood Hotel.



The Broad and Callowhill Station, built in 1859, was the first Reading depot in Philadelphia to accommodate steam trains, riders previously having been hauled from Peter's Island on the Schuylkill to Broad Street by horse power.



The Reading Terminal, opened in 1893, was built to accommodate the elevated tracks into Philadelphia. It was celebrated for its massive use of structural steel and proclaimed, "This Terminal is the largest and most commodious of its kind in the world, and one of the most beautiful public buildings in America."

In 1948, the Reading allocated over one million dollars for modernization of the Terminal.

Mule-drawn colliery cars were replaced by mechanical equipment in the 1850's when the Reading erected large-scale coal facilities adjacent to their lateral colliery runs.

Shaping the Track of the Future

On the day the railroad celebrated the opening of its single track, Robinson's plan for a second track lay on the president's desk. While Gustav Nicolls contracted for wood along the road of the main line, Lewis Kirk worked on the *Novelty* to adapt her to burn anthracite. When Peacock's Lock and Falls wooden bridges fell in flames to the river, Nicolls and Osborne laid out plans for bridges of stone. And by 1847, bridges of stone were being replaced by bridges of iron.

The Company shops at Reading, the iron foundry, the brass foundry, and the steam hammer shop were expressly designed to meet Philadelphia and Reading needs, needs which only the working team of the railroad could understand. When the famous rolling mills of the Phoenix Iron Company, Haywood and Lee, and Montour, could not supply enough iron for the road, the Philadelphia and Reading built its own rolling mill.

Between 1838 and 1860 Port Richmond expanded to accommodate eighty brigs and schooners, all loading or unloading at the same time. Tracks were extended, weigh scales put in, schedules established. By 1875, the railroad was building its own colliers and shipping over 12,636,000 tons of freight a year.

The Philadelphia and Reading attracted the inventive genius of James Millholland and John E. Wootten, who effected radical changes in anthracite locomotive design. It supported the Philadelphia, Reading and Pottsville Telegraph Company, the first telegraph company in Pennsylvania. It widened tracks, laid steel rails for iron, filled up one of the valleys of the Catawissa and moved a river at Port Clinton.

Meet Me at the Station

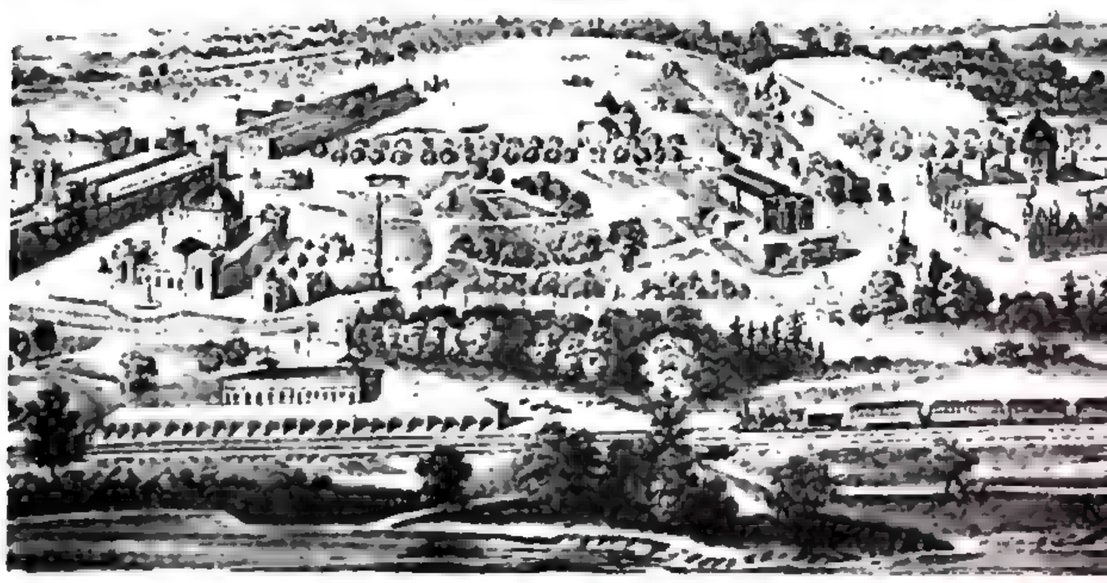
A railroad is more than track and cars, wheels and switches. It is more than a shipment of coal, a carload of grain, the power of steam or diesel. And the Philadelphia and Reading, linking the inland communities of Pennsylvania to the historic city of Philadelphia, was also a festive event at the depot, a timetable for an excursion, a bunting-draped locomotive. The *Rocket, Old Ironsides, Gowan & Marx,* camelback, *Boardwalk Flyer, Crusader* were not just names of locomotives and trains. They were legend-makers.

"This great work is finished," a speaker thundered in 1842. "It stands a monument of the wisdom that conceived, the genius that planned, the energy that sustained, and the mechanical skill that executed it—the model railroad of the day."

"Look at it," one writer cried in 1852. "Look at the road, as it winds its way amidst the rich fields and sloping banks of the Schuylkill, and gradually sinks into the bosom of the most beautiful and populous city on the American continent! One hundred miles in length, sloping gracefully from the coalbeds to the river Delaware—is not that a beautiful idea to contemplate? Nature has had a hand in it, and enterprising man has improved what she carefully prepared."

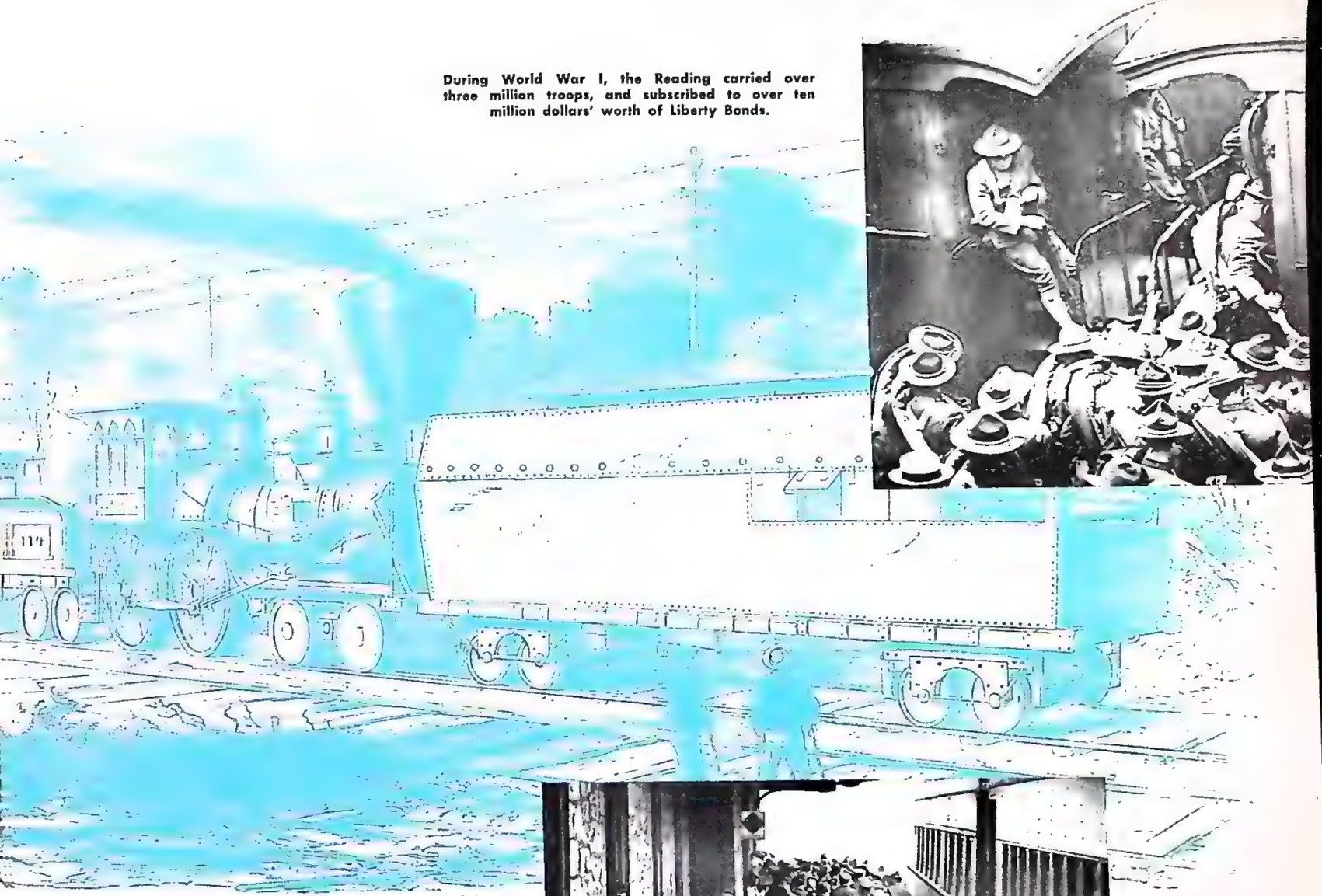
The railroad of pleasant places and summer tours, beckoned tourists to Abington, noted "for the number and purity of its natural springs." It invited excursionists to Jenkintown where Beechwood Inn (Beaver College) "rears its broad front on the brow of a hill overlooking the station, its gates opening directly from the railroad platform."

Organ dedication trips, picnics at Eagles Mere, camp meetings at Landisville, fishermen's specials to Schellenger's docks at Cape May, fairs at Lebanon and Kutztown, political conventions at Harrisburg, peace jubilees, band concerts and soldiers' reunions, all made the Philadelphia and Reading a partner in the Pennsylvania tradition of pleasant living.



"Sidelings," or sidings as they are called today, brought the railroad to the door of industry. Easy access to the Reading right-of-way meant sure, cheap and rapid distribution for their products.

During World War I, the Reading carried over three million troops, and subscribed to over ten million dollars' worth of Liberty Bonds.

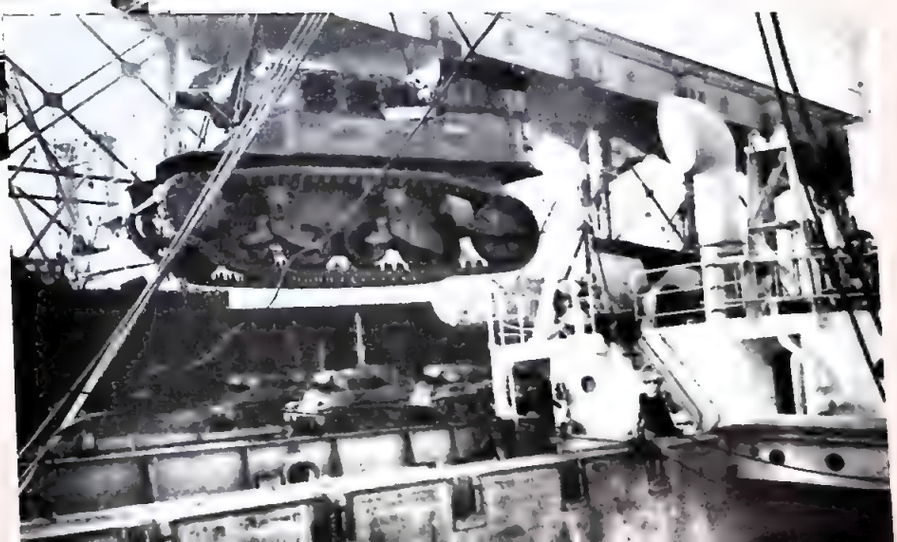


Rufus Wilder designed this armored car to aid in the defense of Washington during the Civil War. The Reading further contributed a former president and its giant labor force to the Union cause.

The Reading takes pride in its service to troops at Indiantown Gap and Camp Kilmer, and its handy commuter facilities at Phoenixville for soldiers detained at Valley Forge Military Hospital.

The original station of the Reading at Broad and Cherry Streets, Philadelphia, became a military hospital in December of 1861. It had accommodations for 650 patients.

Port Richmond was a busy place during both World Wars, shipping guns, tanks and heavy supply cargoes to all corners of the world.



The Reading Terminal at the turn of the century. Notice the camel-back No. 163, the excursion train to Eagles Mere, the gas lamps, and the riders rushing to get their trains—one aspect of railroading that will never change.

Life-Line of Defense

Not all the travellers on the route of the Philadelphia and Reading were as happy as excursionists and some of the trips were not pleasure outings. For the Philadelphia and Reading Railroad, like the country it helped to build, went to war. Its merchandise became ammunition, its passengers became fighting men, its excursions, military caravans.

By the time the Civil War broke out, the Philadelphia and Reading was equipped to be one of Uncle Sam's greatest carriers. Under the leadership of its president, Charles E. Smith, the Philadelphia and Reading joined the Union cause and with its wheels, tracks and hands dedicated itself to the service of the Nation. Between 1861 and 1865, it provided money for Government loans and gave emergency trackage to the Pennsylvania Railroad when its lines were threatened by Confederate raiders along the Susquehanna. Employes contributed over $20,000 and ten per cent of their wages to the Sanitary Fair, held in Philadelphia in 1864. John Tucker, a former president, became Assistant Secretary of War, and George Baer, a future president, became a hero at the battle of Bull Run.

The railroad man was always an adventuring man. The Philadelphia and Reading man joined an expedition to Brazil in 1878 where jungle and fever were his enemies. He joined the A.E.F. in 1917 and helped to build narrow-gauge supply lines across the vineyards of France. He helped to carry the battle for Europe from the beaches of Cherbourg to the battleground of St. Lo in 1944. In 1951 he helped to build the freight yards at Kaesong, three days after he had cheered their destruction by the Allied Air Force. He helped to make the steel rails over which the victory of supply was won.

But a railroad does not count its shipment of troops, its transfer of tank and gun cargoes, or its sealed cars of explosives as the real measure of its wartime contributions. It does not count the Navy E's for excellence or the "thank you's" at the U.S.O. In 1945 the Reading, like every American business and home and store, looked first at its blue memorial flag, crowded with eighty-one gold stars.

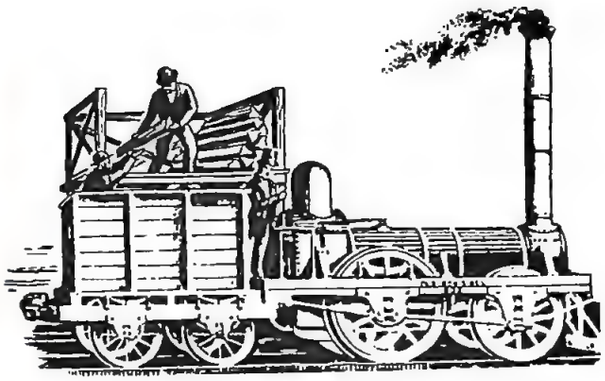
In war and peace, the railroad has traditionally been a constructive enterprise. Over the years, between the construction of Catawissa's wooden trestles and the final riveting of the steel bridge at Shepp's Dam, the Reading Railroad has been one of the most active builders in the Commonwealth of Pennsylvania.

Romance Rides the Reading

A railroad is made of the courage to run through, over, and around mountains. It is made of men with wisdom, strong hands and an infinite capacity for making improvements—improvements in service, motive power, signalling, bridge construction, in the life of the communities in which it has played a long and intimate role. A railroad, the Reading Railroad, is the memory of stories and adventures. It recalls the colorful Hopewell Frog War, when the engineers and locomotives of two dynamic railroads met head on, in a clash over crossing rights. It remembers the shrewd battle that Richard Osborne waged in the Lebanon Valley Railroad's struggle for an advantageous station location in Harrisburg. And people still talk about the breakneck races to New York and to Atlantic City, when the Wootten camelbacks swayed and steamed their way to new speed records. Many still recall that the Reading came in first—continuing a habit of long and honorable standing.

The locomotive to its engineer and crew was the symbol of a way of life, and on days of great celebration they dressed their iron horses with flags, flowers and portraits. Reading stations, too, were often decorated.

The great age of steam, which has drawn to a close on the Reading, produced familiar landmarks along the railroad. The water tower, with its elephant-trunk feeder, was but one characteristic structure.



The first locomotives on the Reading were wood-burners. Here is an artist's conception of an ingenious loading device.

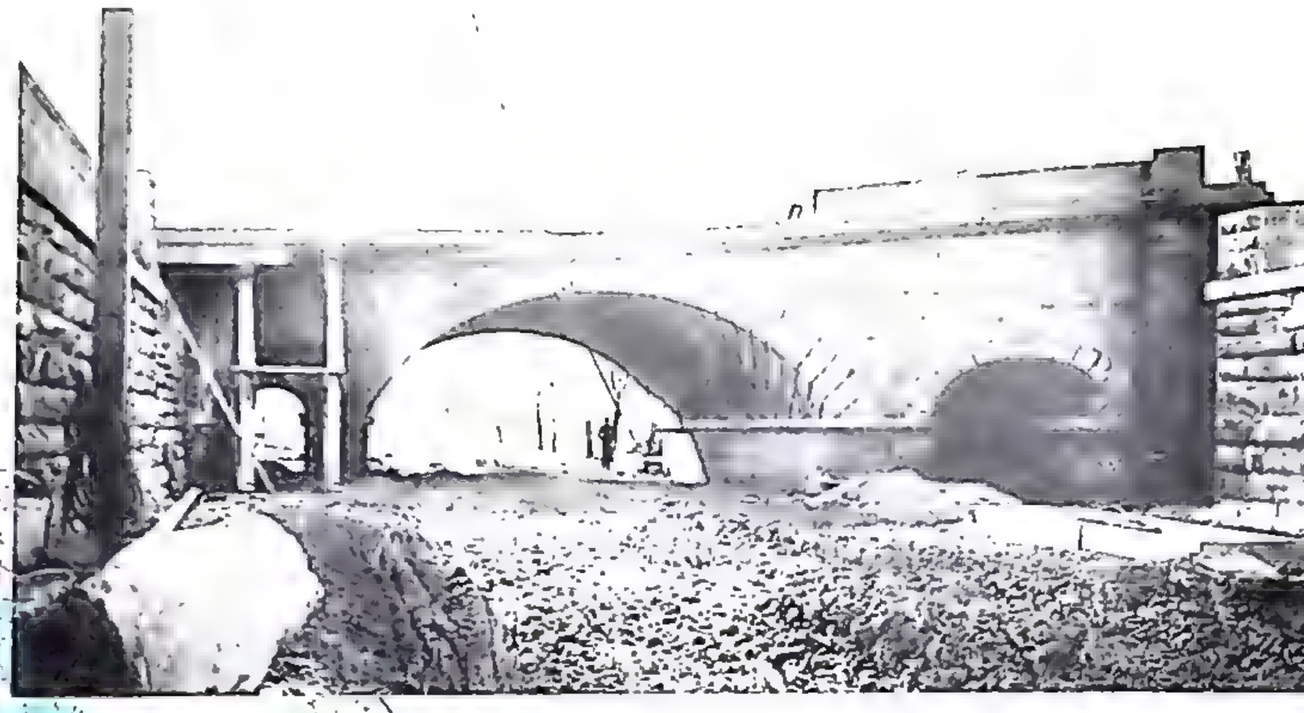
The Reading's suburban electrification, a titanic reconstruction project of the thirties, brought quiet, clean and dependable commuter service to a high point of efficiency on the Reading.

Anyone who has ever seen a "high-balling" steam express race through a watering trough, spraying gushers of water against window and car, knows the excitement of steam travel.

A scene never to be duplicated on the Reading. Great steam monsters being coaled and watered at the coaling station in Reading.

In step with developing American technology, the Reading has adopted full-scale use of diesel fuel. With the power of 6,000 horses, this diesel hauls traditional Pennsylvania anthracite over the grade at Bear Run.

The Reading's Susquehanna River Bridge at Harrisburg was constructed between 1920 and 1924. Forty-six graceful arches, stretching out thirty-five hundred feet, serve as a gateway to western Pennsylvania.



The Skew Bridge at Sixth Street, Reading, was built in 1857 by Richard Osborne. The course of each arch is forty feet, and no keystone is necessary to support the carefully laid masonry.

Peacock's Lock Bridge, at Tuckerton, near Reading, stands today as a fine example of masonry bridgework. Rebuilt after a fire in 1854, the nine-span arch is still in use.

The Lebanon Valley Bridge is part of the legend of Pennsylvania, having been the scene of construction battles in 1856, and going up in flames during the riot-raids of the 1870's.

This old covered wooden bridge over Pennypack Creek, at Huntingdon Valley Station, was built in 1877 and torn down in 1916. The last covered bridge on the Reading, near Pine Grove, was removed in 1956.

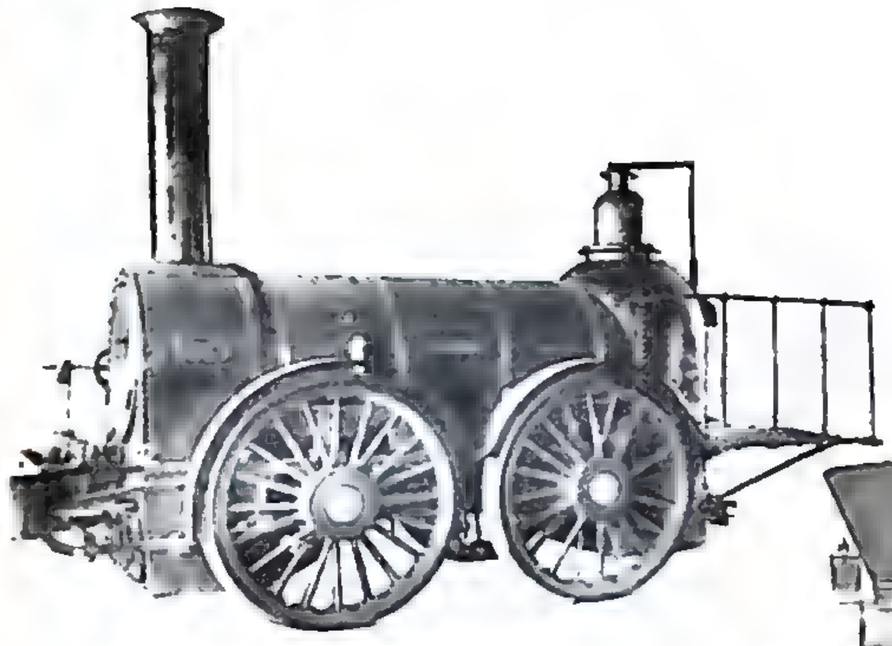
Shepp's Dam Bridge carries the Reading Belt Line Branch across the Schuylkill at Reading. The ultimate in modern railroad bridge styling, it was opened in February, 1957.

The first signals on the railroad were made by the trainman who ran on foot ahead of the train. Tower signals, called "wind mills," were installed on the Reading in 1864.

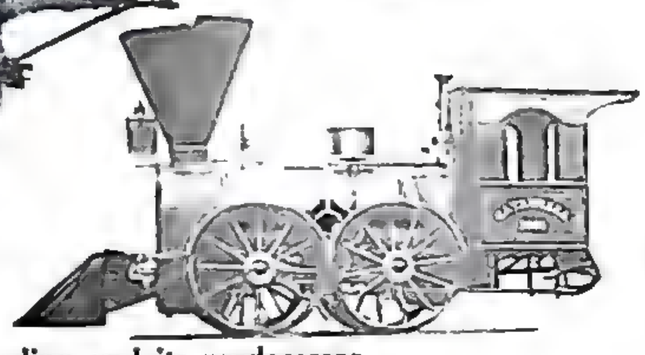
The "high-ball" lantern signal, which brought a famous expression to speed railroading, was generally used at stations and yard areas.

The semaphore—manual, then electric—is still a feature of the railroad. The semaphore at stations is also a traditional signal for mail pick-up.

The famous Hall or "banjo" signal was long a familiar Reading landmark. Electrified in 1894, they have all been removed from the System in favor of automatic block signals.

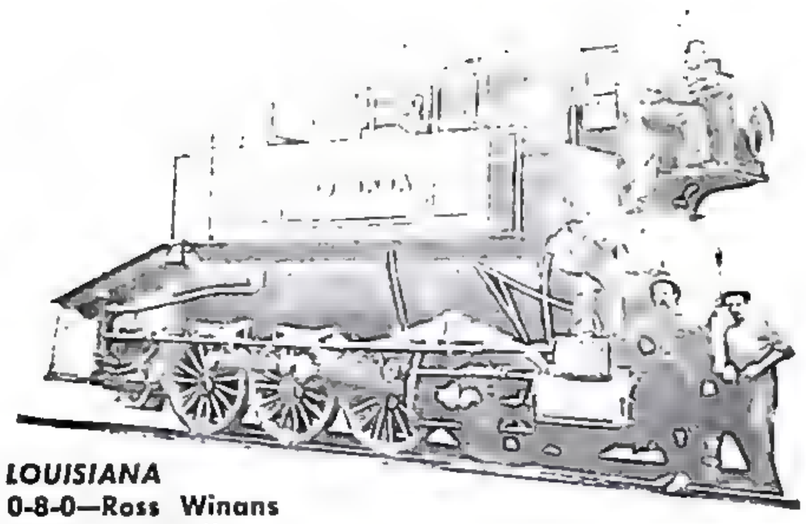


CATAWISSA
0-4-0—Edward Bury
1833—18,000 lbs.



ROCKET
0-4-0—Braithwaite, Milner & Co.
1838—16,500 lbs.

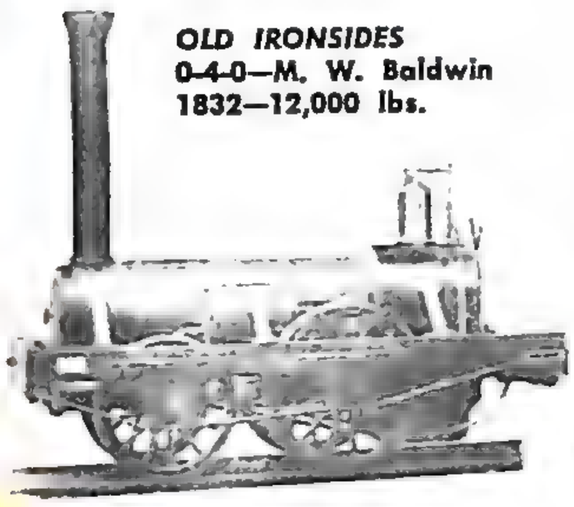
The first locomotives used by the Reading and its predecessor railroad, The Little Schuylkill, were imported from England. The *Rocket* still can be seen, on permanent display at The Franklin Institute.



LOUISIANA
0-8-0—Ross Winans
1850—53,775 lbs.

A "Camel" coal hauler, the *Louisiana* was built by the famous Baltimore locomotive designer. Many locomotives of this class were built for the Reading and other Eastern railroads.

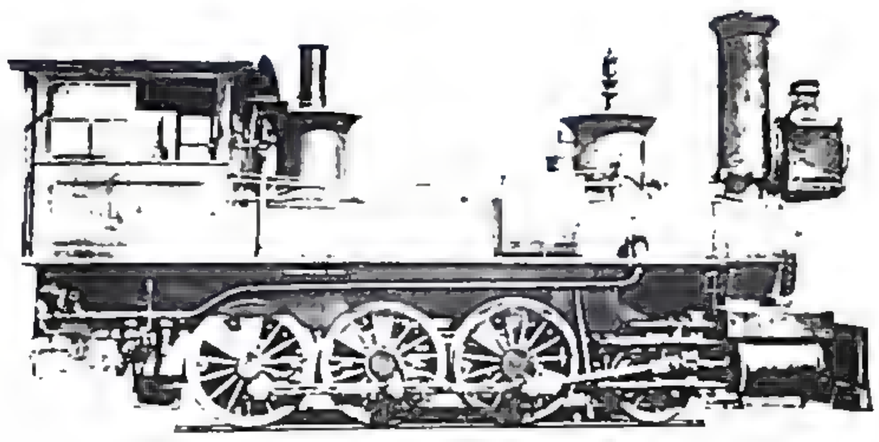
ONE HUNDRED AND TWENTY-FIVE YEARS



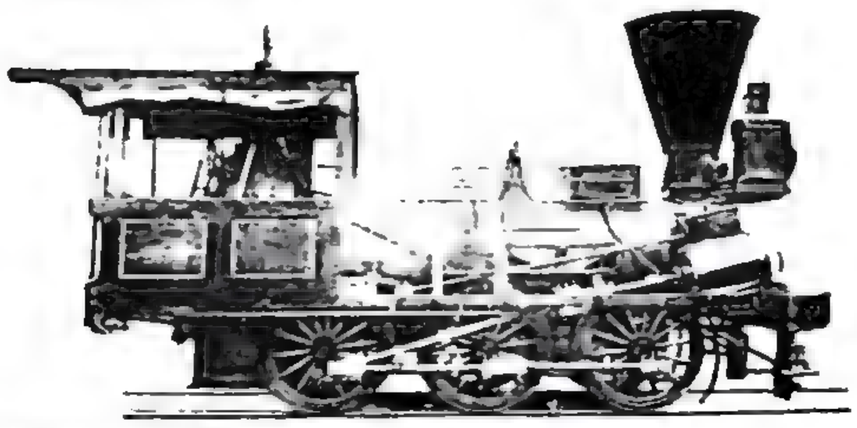
OLD IRONSIDES
0-4-0—M. W. Baldwin
1832—12,000 lbs.

GOWAN & MARX
4-4-0—Eastwick and Harrison
1839—22,000 lbs.

These two Philadelphia pioneers were monumental achievements of the early American railroad industry. *Old Ironsides* was Baldwin's first locomotive, and the *Gowan & Marx* set a tonnage record known around the world when it pulled forty times its own weight on a run from Reading to Philadelphia in 1840.

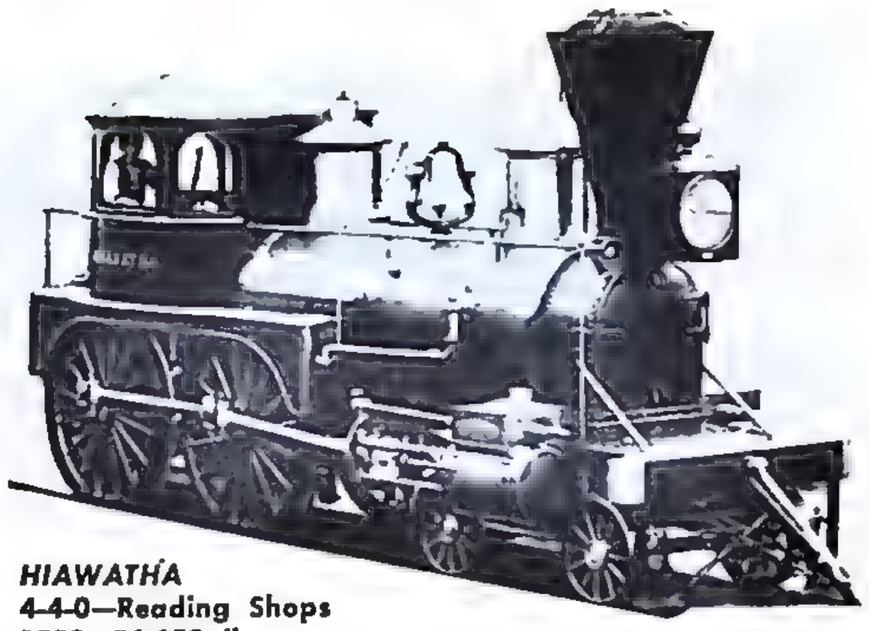


TENNESSEE
2-6-0—Reading Shops
1852—60,525 lbs.
Standardized practice of locomotive building began with this class of freight locomotive.

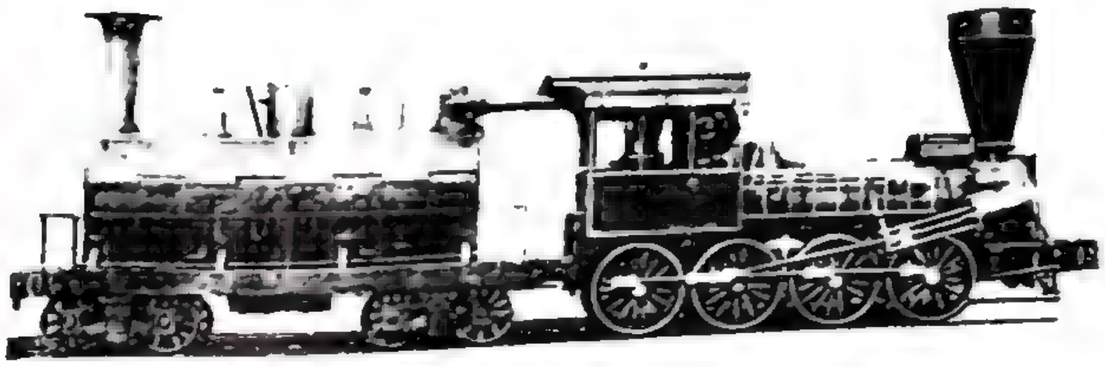


UNITED STATES
0-6-0—Baldwin
1844—41,850 lbs.

Baldwin's flexible beam truck improvement became the backbone of freight power on the Reading, and was in part responsible for winning tonnage supremacy over the Schuylkill Canal within two years after the railroad was completed.

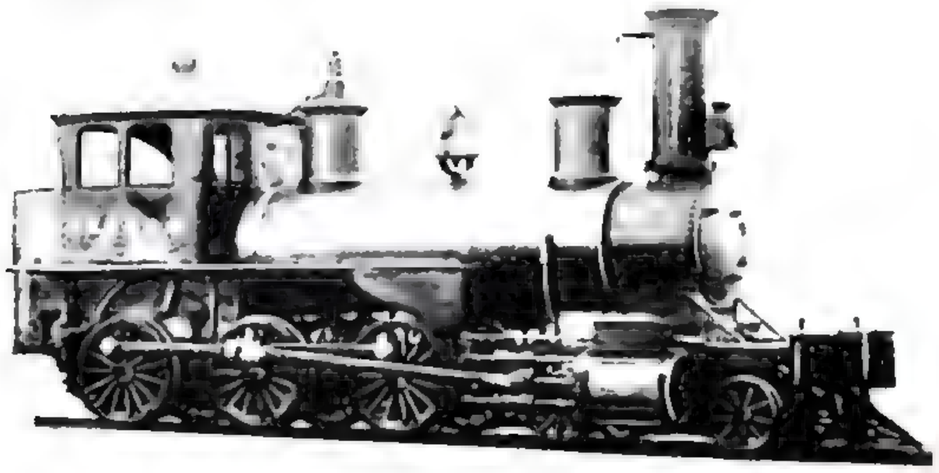


HIAWATHA
4-4-0—Reading Shops
1859—56,650 lbs.
This familiar round cab locomotive was a Main Line express locomotive for a quarter of a century. The *Hiawatha* ran more than 720,000 miles before retirement.



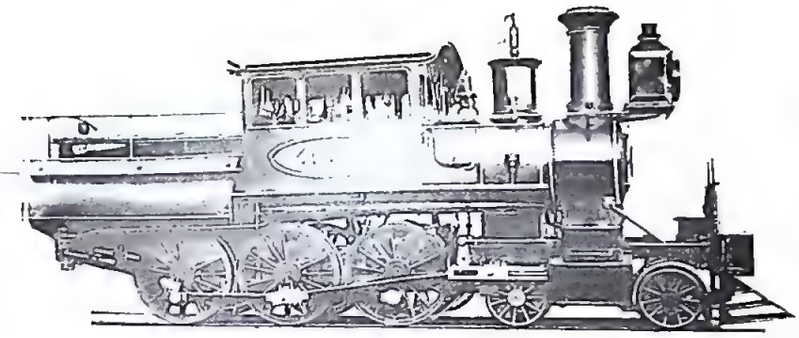
NOVELTY
0-8-0—Reading Shops
1847—47,250 lbs.

A Reading anthracite experiment, the *Novelty* was not repeated. The picture shown is the oldest known Reading locomotive photograph.



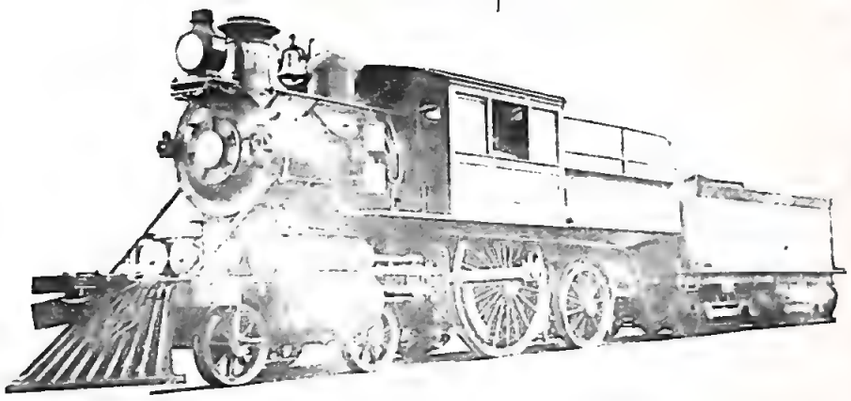
NEVADA
4-6-0—Reading Shops
1863—68,600 lbs.

The common gun-boat locomotive, the *Nevada* was one of more than one hundred of its type in freight service on the Reading.



408
4-6-0—Reading Shops
1877—98,300 lbs.

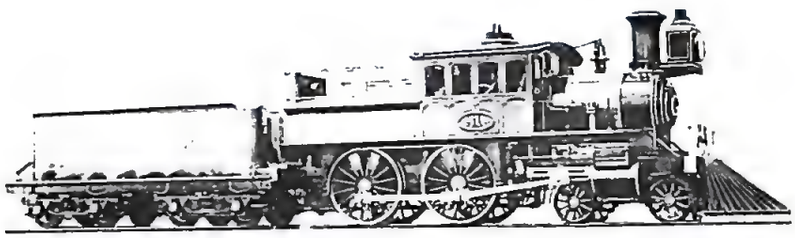
For economy of fuel, a new firebox design patented by John E. Wootten, general manager, was applied and became a Reading standard.



385
4-2-2—Baldwin
1895—115,000 lbs.

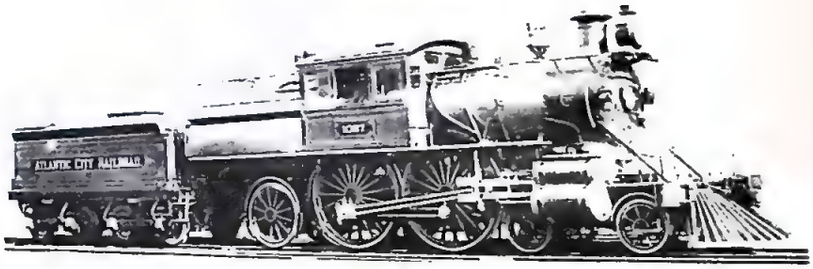
This single driver "Bicycle" type locomotive was a further experiment in speed, and at one time exceeded a speed of one hundred miles an hour on the New York Branch.

OF MOTIVE POWER ON THE READING



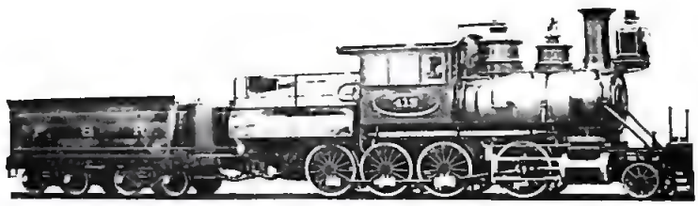
411
4-6-0—Reading Shops
1880—103,000 lbs.

In its time, the *411* was the heaviest passenger locomotive in the East, especially designed for New York City express service. It required two firemen to maintain peak performance.



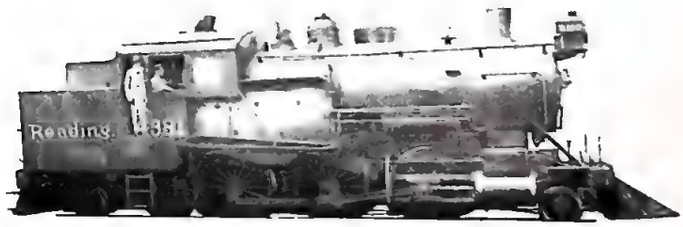
1027
4-4-2—Baldwin
1896—153,800 lbs.

This Boardwalk bound flyer was the first to operate regularly at speeds faster than a mile a minute.



415
2-8-0—Baldwin
1880—113,900 lbs.

The *415* was specially designed for heavy duty between the mines of Pennsylvania and tidewater at Port Richmond, the classic route of the Reading.



381
2-6-4—Baldwin
1903—201,700 lbs.

This double-ender, typical of suburban service, is shown at Reading Terminal following a run from Chestnut Hill.

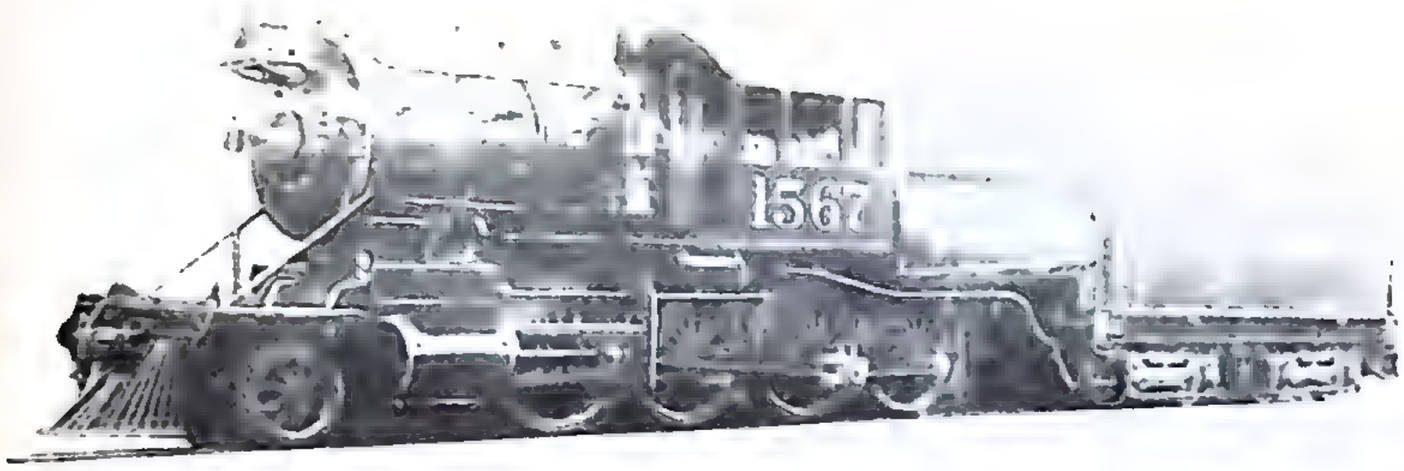
618
2-4-2—Baldwin
1892—140,000 lbs.

An experiment in speed locomotion which looked forward to the travel demands for the world's Columbian Exhibition.

340
4-4-2—Reading Shops
1906—223,200 lbs.

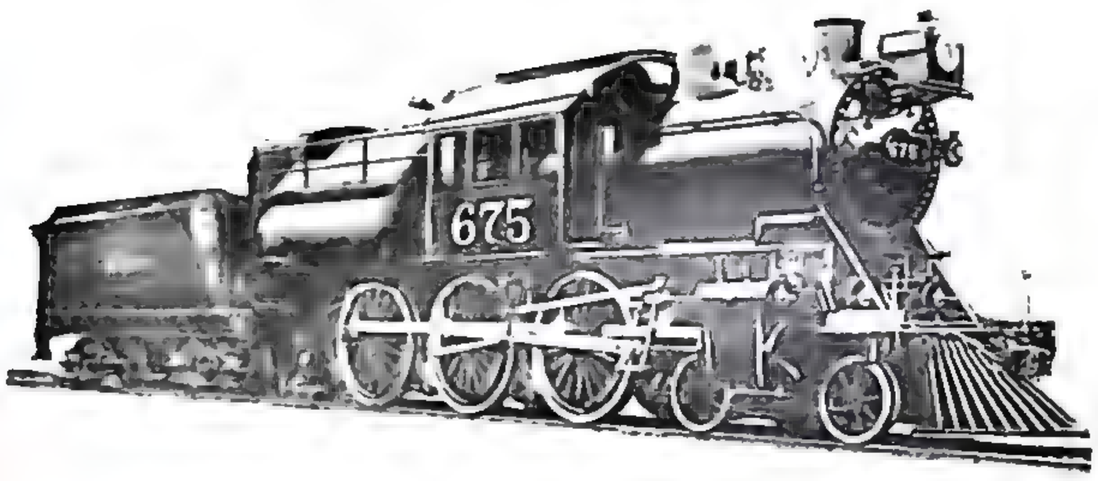
This high-wheeled high flyer was one of the Atlantic class which helped to preserve the Reading's reputation for rapid heavy hauling against all competitors.

ONE HUNDRED AND TWENTY-FIVE YEARS OF MOTIVE POWER ON THE READING



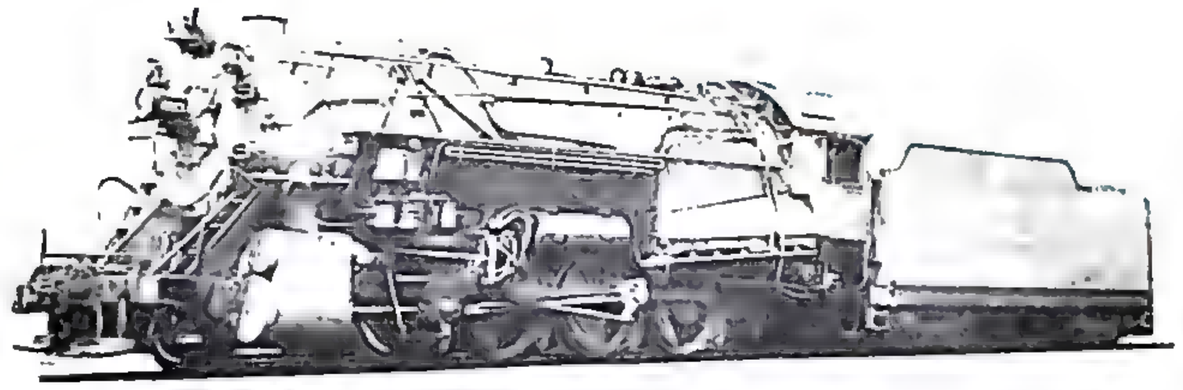
1567
2-8-0—Reading Shops
1910—226,250 lbs.

These locomotives specialized in fast, specialized Reading interchange service at places like Allentown, Reading and Harrisburg.



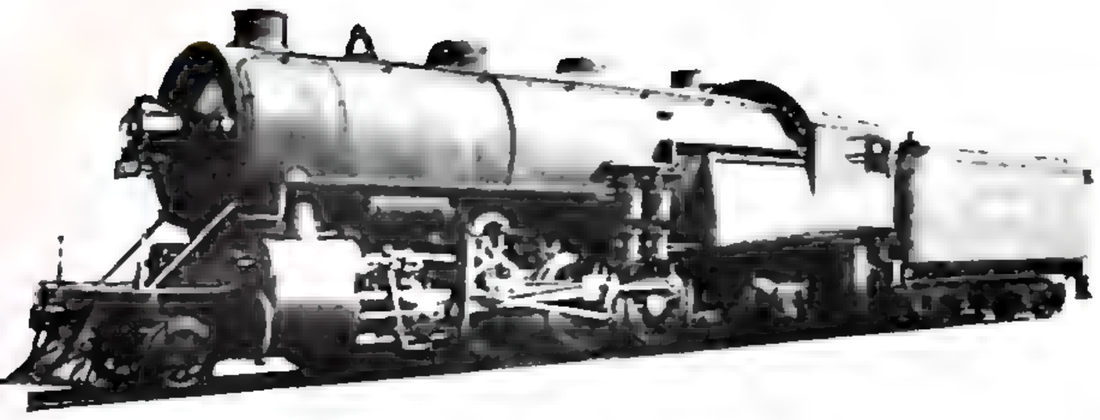
675
4-6-0—Reading Shops
1911—226,750 lbs.

Fresh from the shops, this three-cylinder locomotive was exhibited at the Master Mechanics' Association Convention in Atlantic City, and was the pride of the Reading Shops.



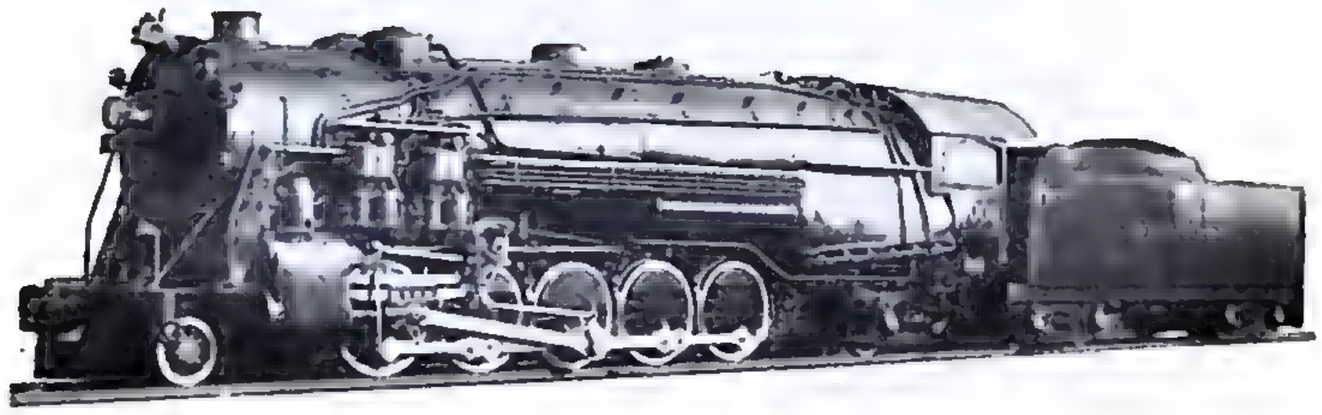
2028
2-8-0—Baldwin
1925—314,950 lbs.

Fifty locomotives of this class augmented the Reading motive fleet during the boom of the twenties. 2028 is shown at the Rutherford coaling station.



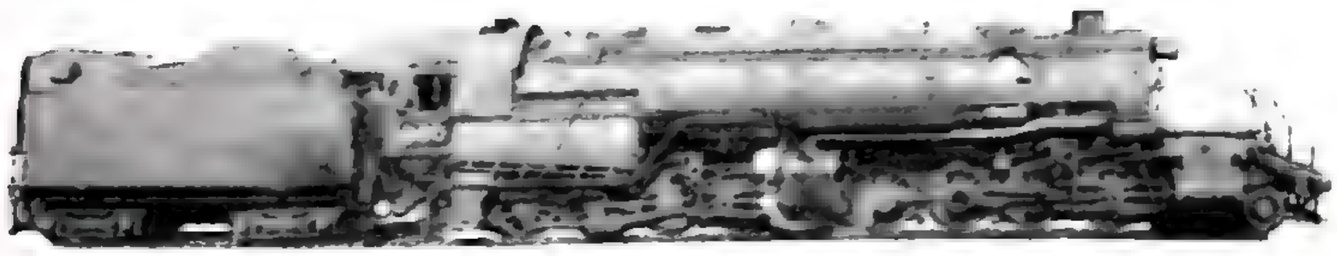
1700
2-8-2—Reading Shops
1914—249,700 lbs.

The increasing size of locomotives, symbolized by this giant, initiated a bridge-strengthening and renewal program on the Reading, especially on the New York Branch.



3000
2-10-2—Reading Shops
1927—439,800 lbs.

This revised version of the Santa Fe type locomotive was the heaviest type in the United States in 1927. The revised wheel arrangement, from 2-8-8-2 to 2-10-2, greatly added to the speed and efficiency of the locomotive.

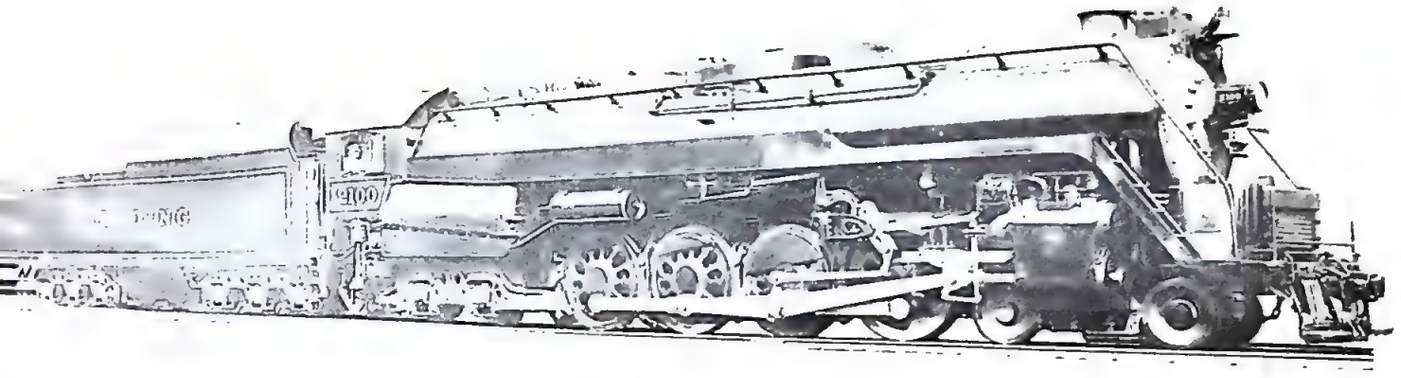


1800
2-8-8-2—Baldwin
1917—478,500 lbs.

World War I demanded the *Mallet*, shown here at St. Clair Engine House, to carry the massive tonnage over the Reading's heaviest grades.

50
4-4—Ingersoll-Rand
1926—130,000 lbs.

The Reading's first diesel was the second diesel to be placed in service on an American railroad. It was retired in January of 1949, after 23 years of service.

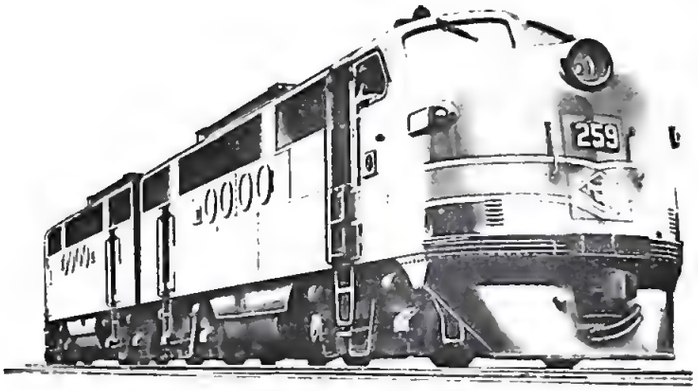


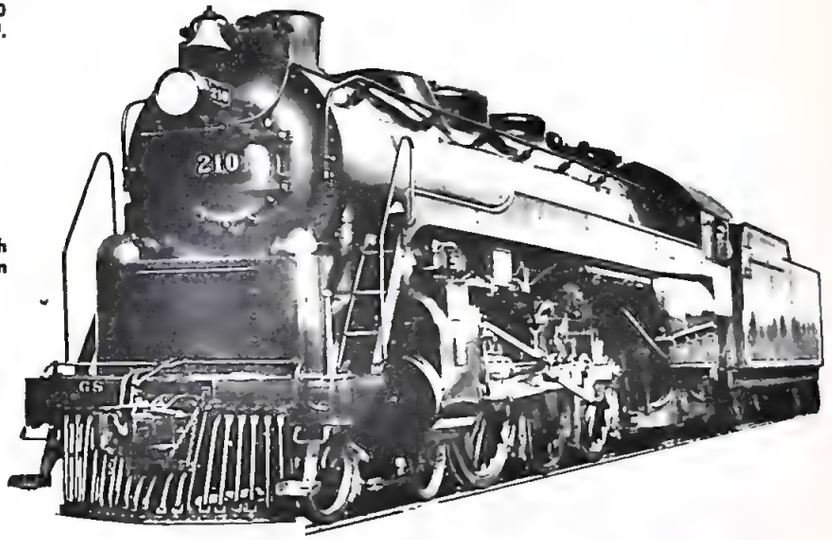
2100
4-8-4—Reading Shops
1945—598,000 lbs.

This giant 110-foot locomotive, with a tender capacity of over 19,000 gallons of water, pulled mile-long freight trains at incredible speed.

259
DF-1 Class Diesel—Electromotive Division
1945—915,400 lbs.

The streamlined diesel ushered in a transition period during which the Reading launched a large-scale dieselization and modernization of all its facilities.





210
4-6-2—Reading Shops
1948—411,360 lbs.

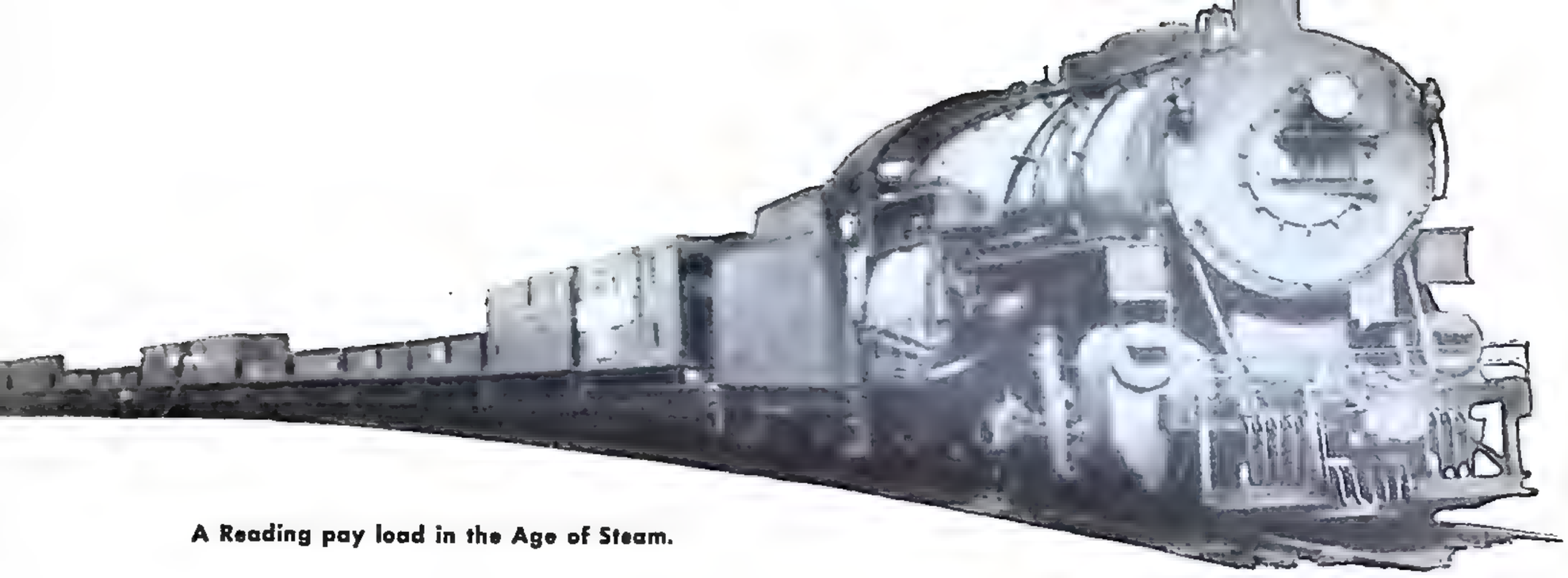
This highly developed passenger class "G-3" was the last of the steam locomotives built at the Reading Shops.

497
RS-1 Class Diesel—American Locomotive Company
1952—968,000 lbs.

This and similar classes virtually completed dieselization of Reading motive power. 360 diesel units are now in service on the Reading.

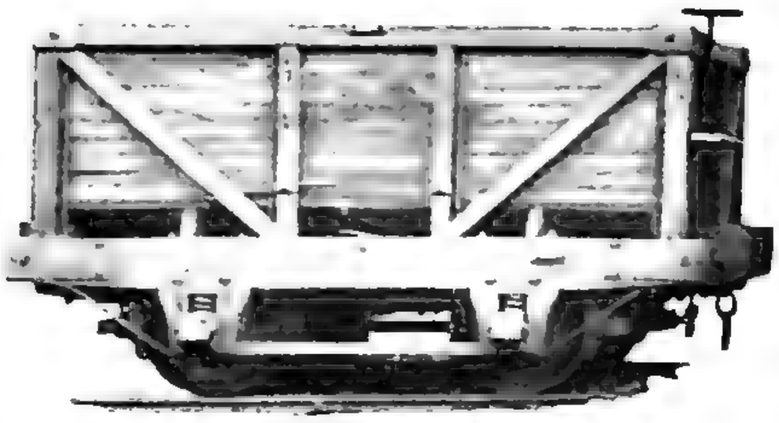
803
6-6—Fairbanks-Morse
1953—390,000 lbs.

The Trainmaster class, symbolized by this 2,400-horsepower dynamo, is the latest class of motive power on the Reading, and represents more than a quarter of a century of diesel locomotive development.



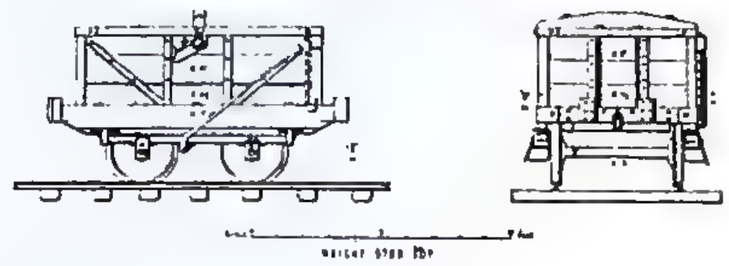
A Reading pay load in the Age of Steam.

Small wooden cars like these, 90 to 100 at a time, brought down the first general merchandise of the Reading, on what used to be called "way-trains."



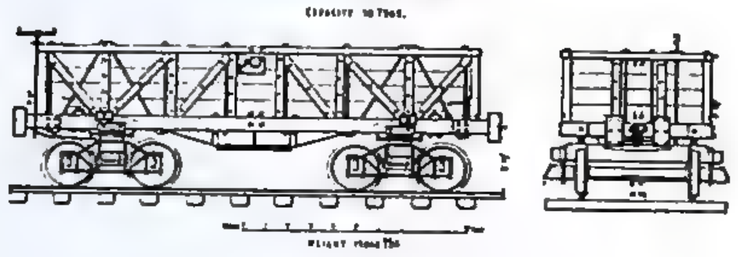
The growth of the coal car, from wood to iron, from a capacity of five tons, to ten tons, to the present-day hopper of seventy tons, indicates the road of equipment progress along which the Reading has travelled for over one hundred years.

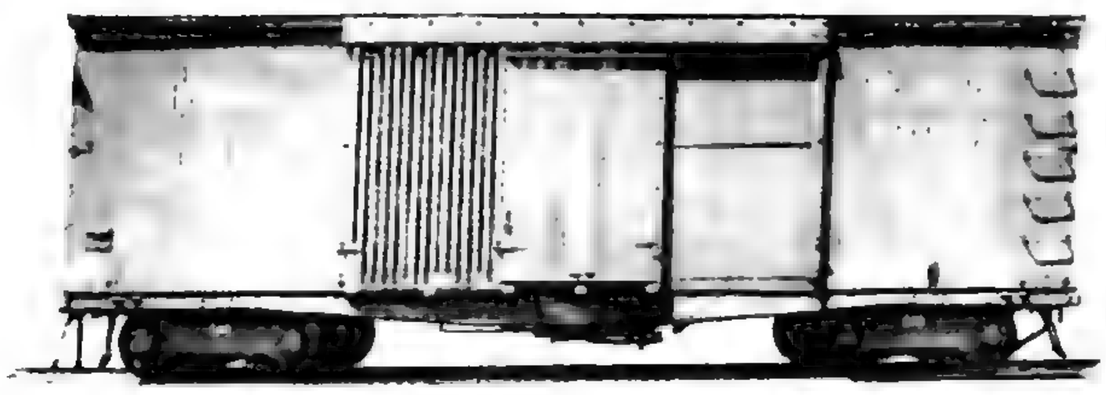
5 TON COAL CAR.



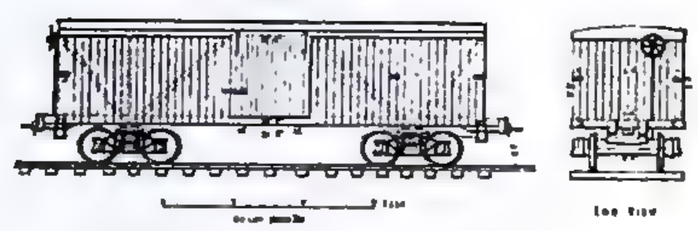
The little caboose was originally an altered box car. Used as a home by the train crew, this car is more symbolic of railroading than any other type.

10 TON COAL CAR

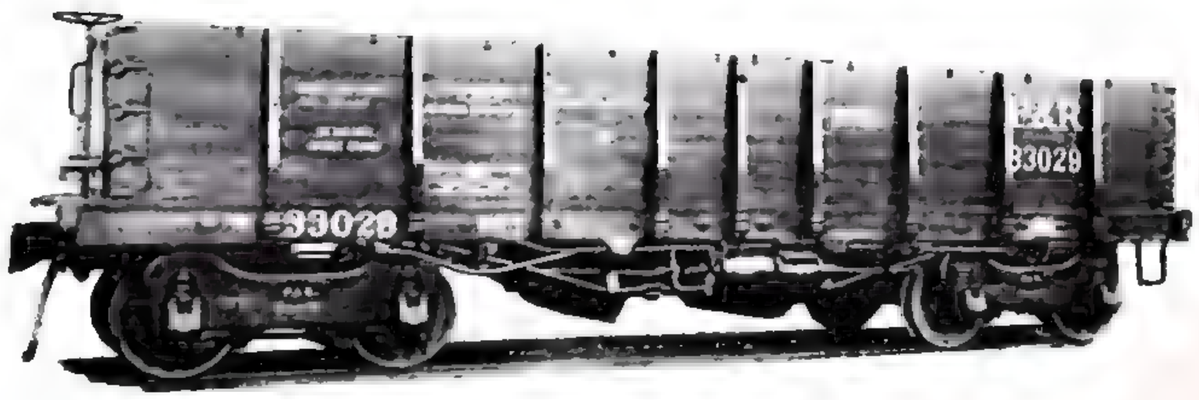




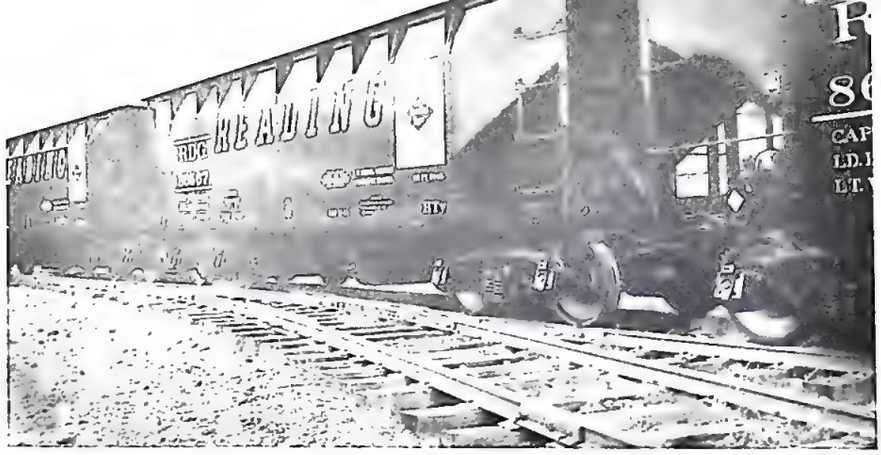
HOUSE CAR.



The *Provision Express*, designed to serve the "market train" area of Reading, Pottsville and the fruitful Schuylkill and Delaware Valleys, was in service up to 1930. House cars and private cars were forerunners of the modern box car.



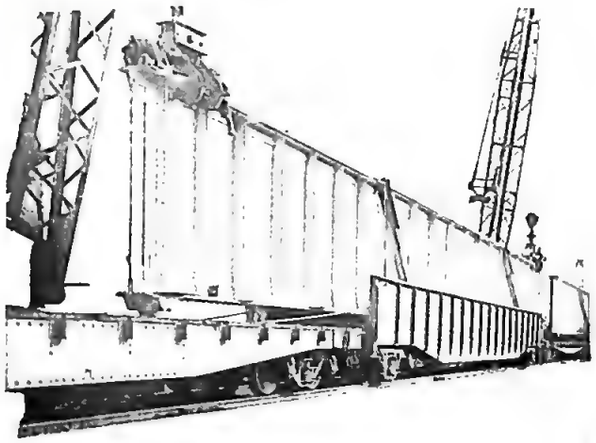
Flat, platform and well cars transported articles like pig iron, castings, wrought marble and timber for some of Pennsylvania's oldest industrial concerns, like Reeves, Buck and Company, now known as the famous Phoenix Iron and Steel Company, at Phoenixville.



Modern Reading coal hoppers, with their handsome speed lettering, haul over forty million tons of anthracite and bituminous coal a year.

FREIGHT CARS

All-steel box cars, with a capacity of 54 tons, are progressively up-graded on the Reading. Most recent improvement was the installation of specially treated plastic-glass flooring.



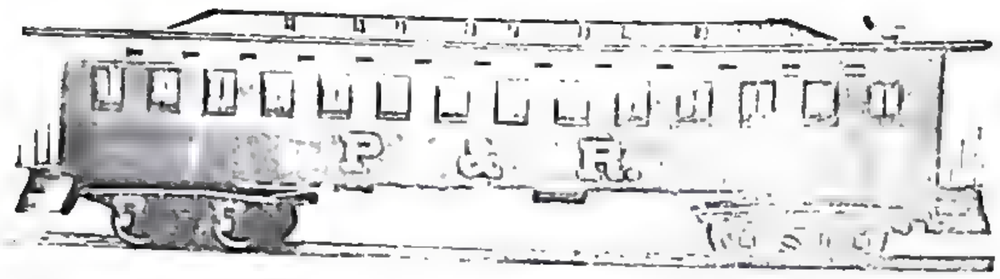
Seventy-foot gondolas, like the one shown, are capable of moving giant bridge spans, boilers and conduits, or gross tonnages of one hundred forty-six thousand pounds.

The modern steel caboose marks the end of a modern freight train, but on the Reading, there is no real end to freight trains. Speedy, economical and varied freight runs on the Reading average 49,655 gross ton-miles per train-hour every year.

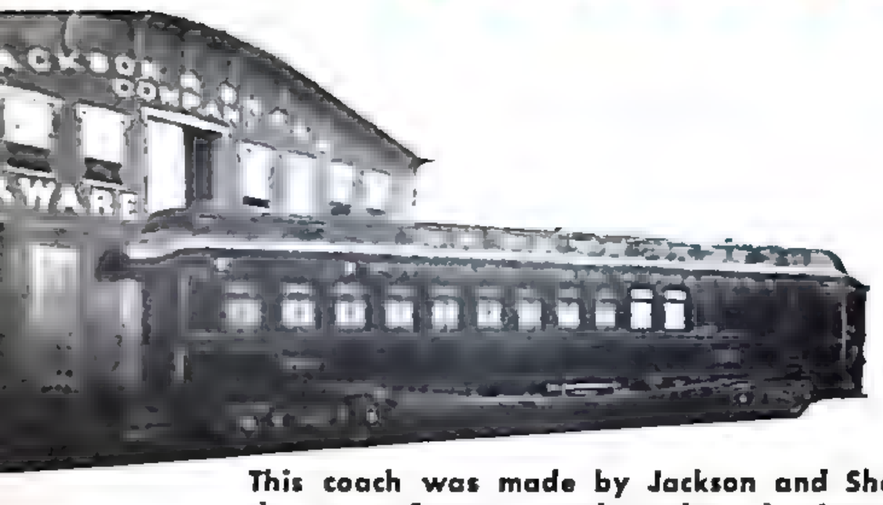
A Reading pay load in the Age of the Diesel.

The transition from the old to the new is sometimes a gradual one. The first passenger coaches of the Philadelphia, Germantown and Norristown looked very much like the familiar horse-drawn stage coach.

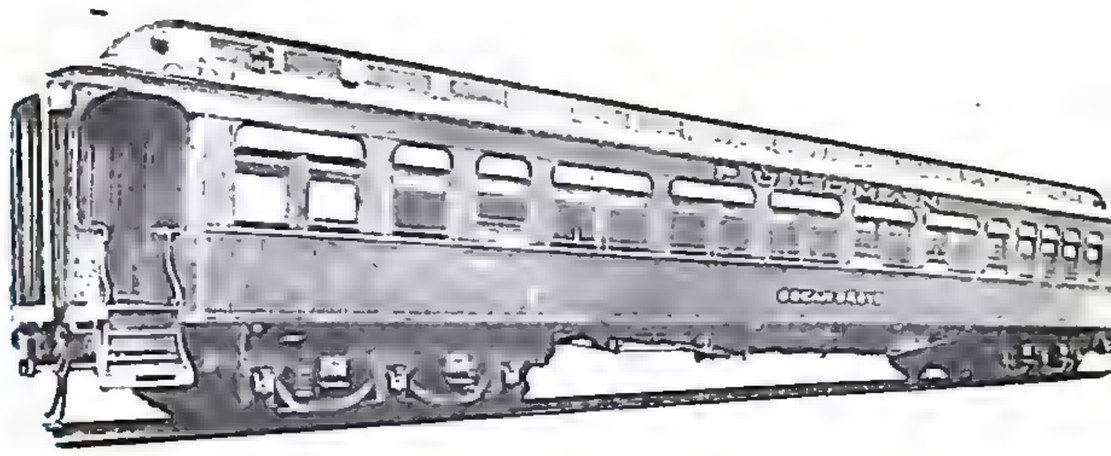
PASSENGER CARS



The first "non-stage coach" passenger cars of the Philadelphia and Reading were box-like affairs with open platforms, slat blinds and a cupola roof. They were in widespread use up to 1860.

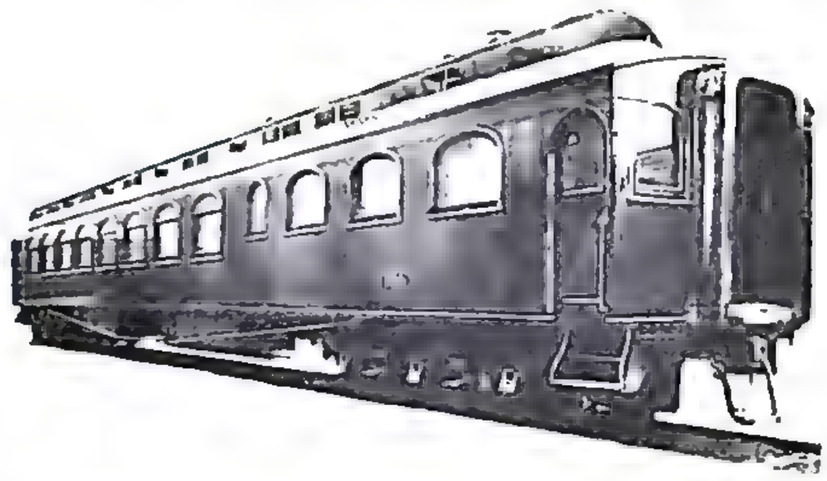


This coach was made by Jackson and Sharp of Wilmington, the most famous coach makers in America in the 1870's. Pintsch lamps, basket racks and wood-burning stoves were still essential interior equipment.



The cafe car, popular to the present day, was first placed on the Reading in 1906. Note the ornate fan windows and the Westinghouse air brake, used on the Reading System as early as 1876.

After 1860, coaches were somewhat more streamlined and, often, brilliantly decorated. Note the change to the rounded platform hoods, the outside hand brakes.

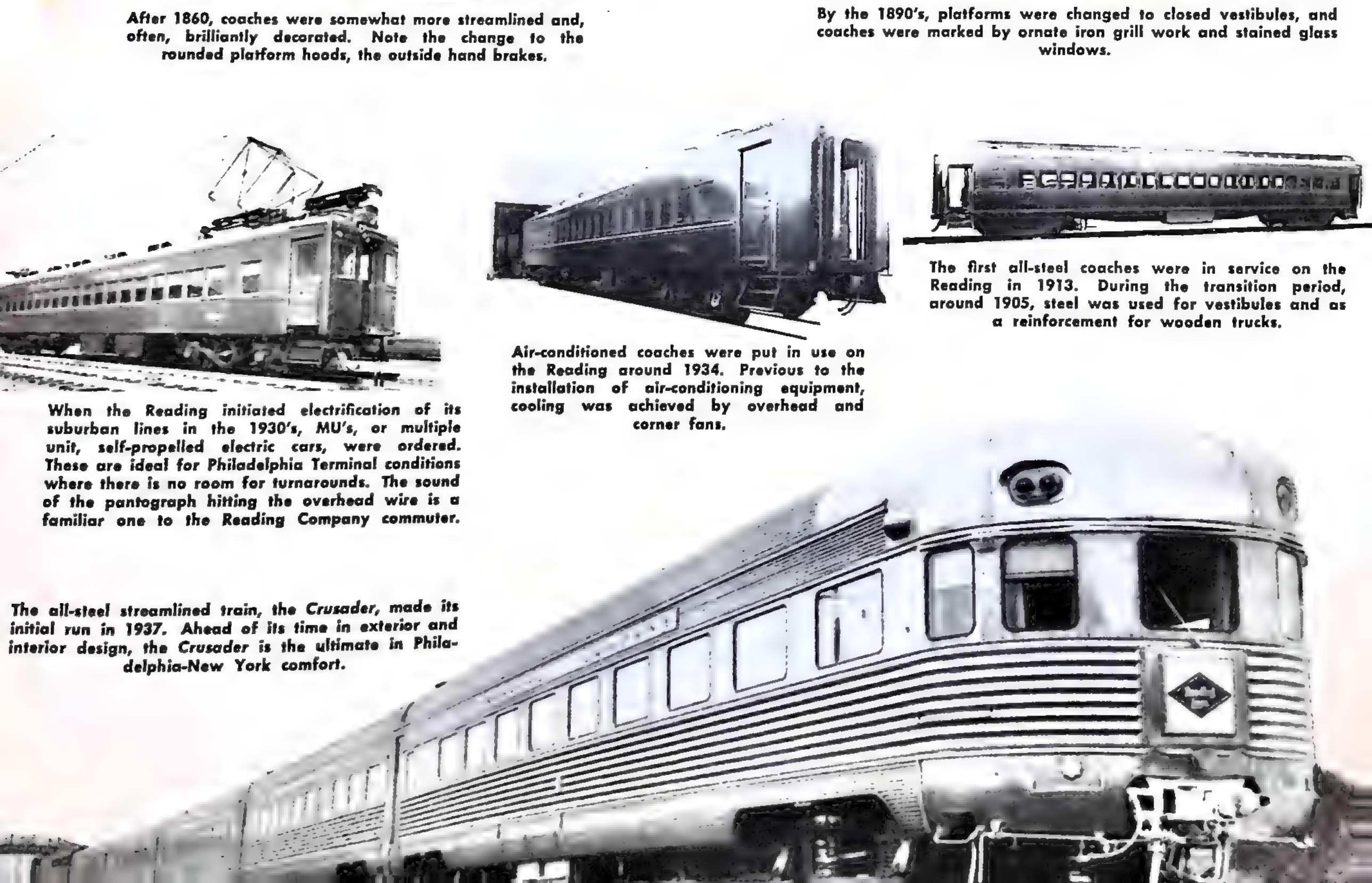


By the 1890's, platforms were changed to closed vestibules, and coaches were marked by ornate iron grill work and stained glass windows.

When the Reading initiated electrification of its suburban lines in the 1930's, MU's, or multiple unit, self-propelled electric cars, were ordered. These are ideal for Philadelphia Terminal conditions where there is no room for turnarounds. The sound of the pantograph hitting the overhead wire is a familiar one to the Reading Company commuter.

Air-conditioned coaches were put in use on the Reading around 1934. Previous to the installation of air-conditioning equipment, cooling was achieved by overhead and corner fans.

The first all-steel coaches were in service on the Reading in 1913. During the transition period, around 1905, steel was used for vestibules and as a reinforcement for wooden trucks.



The all-steel streamlined train, the Crusader, made its initial run in 1937. Ahead of its time in exterior and interior design, the Crusader is the ultimate in Philadelphia-New York comfort.

TODAY'S

Reflecting growth and progress throughout its rich, eventful history, the Reading Railroad today is one of the nation's major transportation systems, serving more than 7,000 shippers and receivers of freight in the heart of industrial America. It is a truly modern railroad—keying the dramatic advances and traditions of a colorful past with the vision of a bright future ahead in the new scientific era of railroading.

One of the ten largest tonnage carriers among American railroads, the Reading's 1,300-mile system stretches through Eastern Pennsylvania and parts of New Jersey and Delaware—a strategic location which encompasses some 23,000,000 persons and about 16 per cent of the nation's purchasing power within a 100-mile radius.

Within this rich area, the Reading serves a bustling industrial economy averaging five plants per mile of railroad, a density not equalled by any other major rail system.

With 43 interchange points with connecting railroads giving access to the entire nation, the Reading is an important "bridge route" between the commerce and industry of the Eastern Seaboard States and the West.

All Diesel Service

Backbone of the entire system is its motive power and rolling equipment, and the nearly 14,000 men and women in trains, terminals, yards, stations and offices who keep them moving.

The Reading was one of the first railroads, late in the 1920's, to introduce the diesel locomotive. Today, the entire railroad is dieselized, with some 360 units of motive power combined with some 30,000 freight cars of all types and sizes, and passenger, mail and baggage cars.

Among freight cars, the Reading owns the second largest fleet of 70-foot gondolas, and ranks among the leaders in number of hopper cars. An important adjunct to freight service—the new truck trailer-on-flat-car service to many points of the Nation—provides another phase in the Reading's complete transportation service.

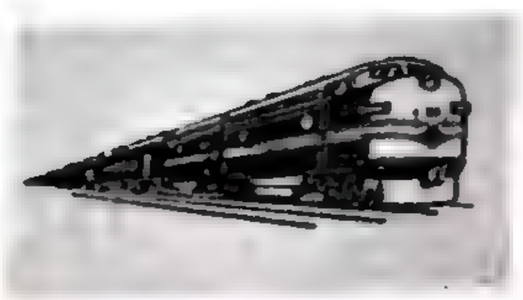
In passenger service, the Reading carried an all-time record number of passengers for a single special event when it transported 119,000 passengers—Scouts and visitors—for the 1957 National Boy Scout Jamboree at Valley Forge, Pa. The railroad's famous *Crusader* express between Philadelphia and New York was the first stainless steel streamliner in the East when it entered service 20 years ago.

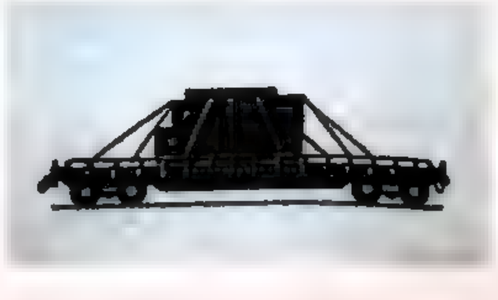
Diversified Service

Although originally conceived by the founders as a prime carrier of anthracite from the mines to tidewater Philadelphia, the Reading long ago began diversifying its transportation services until thousands of products of farm, forest, mine, quarry and factory now flow over its tracks. The Company also owns a substantial marine and motor fleet.

Through connecting railroads, and two large tidewater terminals, products are carried to and from all parts of North America and the entire world.

One of the great hubs of the Reading is the Port Richmond Terminal on the Delaware River, a mile-long facility with 12 modern piers handling coal, ore,





MODERN RAILROAD . . .

MEETING INDUSTRIAL AMERICA'S VITAL TRANSPORTATION NEEDS

grain, merchandise, scrap iron and literally any other product which can be interchanged between rail and ship.

The largest yard in the Reading System, at Rutherford, east of Harrisburg, Pa., features many new electronic advances, and is virtually a "push-button" classification facility. This great rail-gateway, where cars moving between the East and West are classified, was modernized at a cost of more than $3,000,000. It has a capacity of more than 5,600 cars.

New Developments

This application of science to classification of thousands of cars daily is typical of the electronic age on the Reading. On two upstate lines, new centralized traffic control is being pushed to completion on 61 miles of railroad; an automatic "hot-box" detector for spotting overheated journals on car wheels by thermal relays is operating in New Jersey; and electronic devices of various types quickly spot any flaws in rail, to name a few.

All are geared to help move freight and passengers more swiftly and safely to destinations. And the Reading is giving first priority to new scientific developments still on the drawing boards or in testing stages, to further speed the movement of products and persons.

In the decade following World War II, the Reading Railroad spent more than $150,000,000 for capital improvements, including new equipment and electronic facilities.

For example millions have been spent in the Reading, Pa., area alone, junction point of a number of major lines, and site of the vast locomotive and car shops of the railroad. A new route was built in the area to speed freight trains around the city, and another line was constructed to reduce a ruling grade by more than 50 per cent. The Reading city yards are being consolidated into a major new streamlined classification facility and the 11th largest bridge on the railroad was recently constructed over the Schuylkill River near Reading. Thousands of new freight cars have been purchased in recent years, other thousands have been rebuilt and renovated.

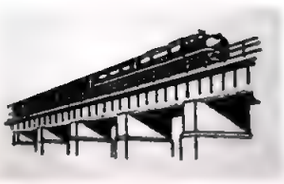
Motor-Marine Fleet

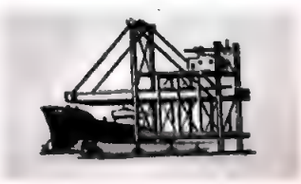
The Reading also owns the Reading Transportation Company, which operates a large fleet of motor trucks and buses in the area served by the railroad; and jointly operates the 358-mile Pennsylvania-Reading Seashore Lines, in Southern New Jersey, with the Pennsylvania Railroad. It also is lessor of the well-known Reading Terminal Market in Philadelphia.

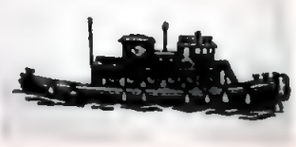
In addition to the marine fleet in New York harbor, the Reading maintains tugs and carfloats in the Port of Philadelphia which convey some 100,000 carloads of freight across the Delaware River to Southern New Jersey each year.

Behind all these services is a hard core of loyal employes, known for long service and devotion to duty. Nearly 6,000 of the 14,000 have been with the Company for periods ranging from 30 years to 55 years, or more, in a few cases. The average length of service is about 23 years. A number of employes are the second, third, fourth and even fifth generations of their families to work for the Reading.

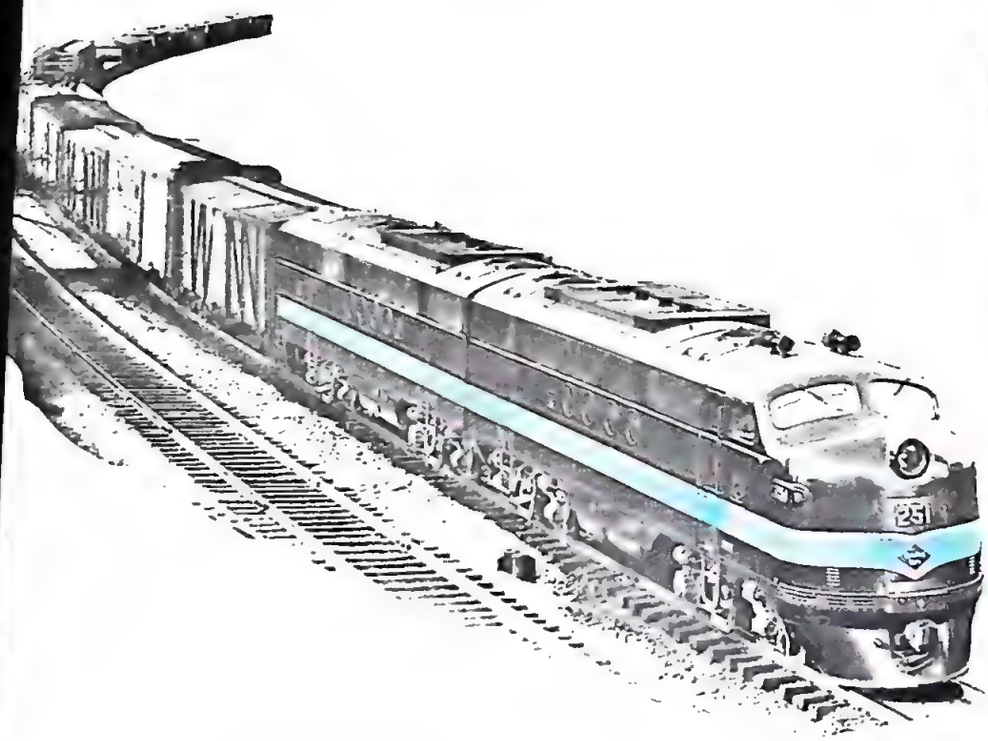
These are a few of the important ingredients of a modern railroad proud of its service, employes and history and looking to the future in the next 125 years with eager anticipation to better serve American industry and the consumer.







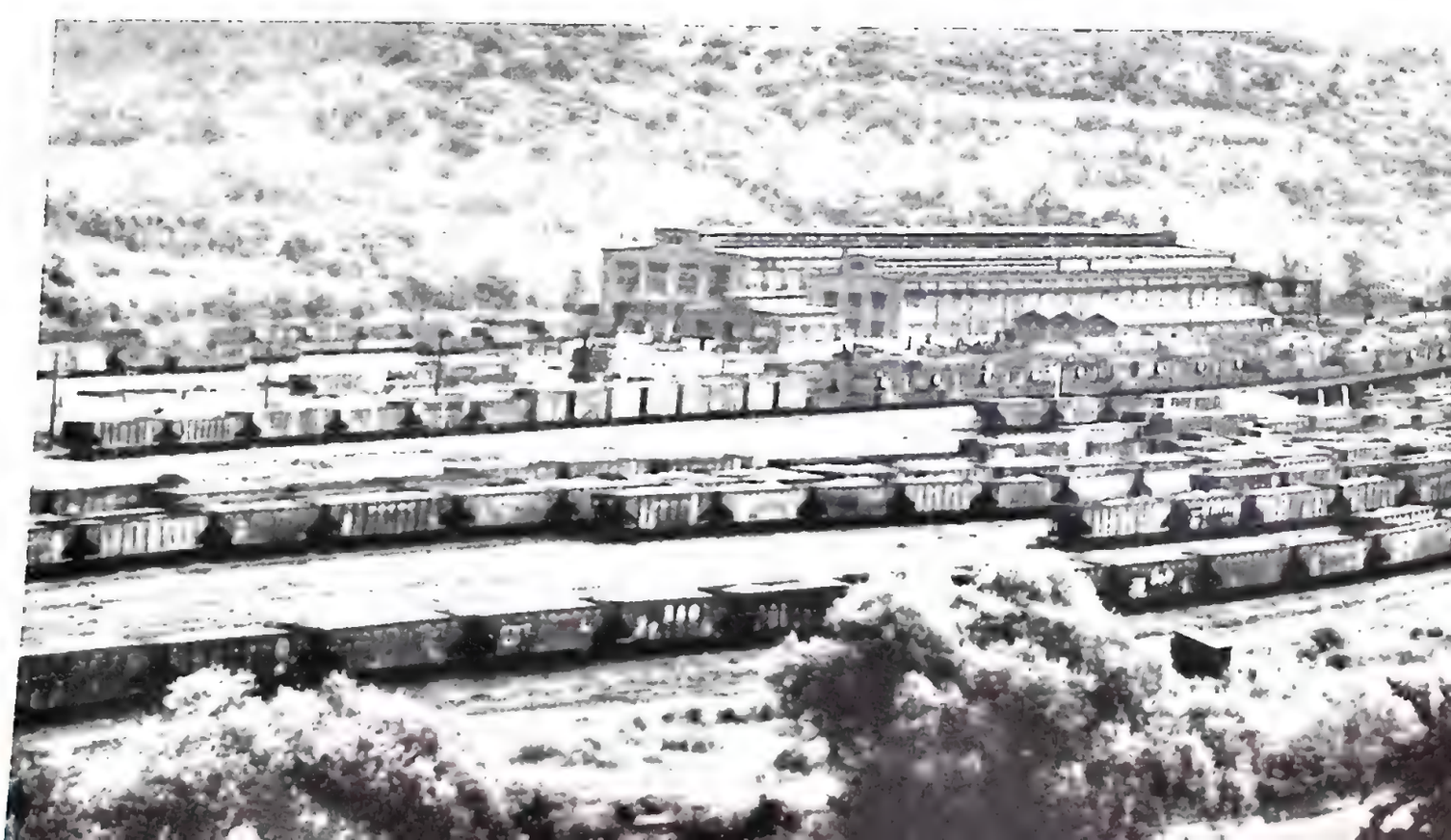
TODAY'S MODERN RAILROAD . . .



This fast, diesel-powered freight train, carrying the myriad products of America's factories, farms, mines and mills, is a symbol of today's railroads.

One of the new facilities of the Reading to speed freight shipments, this modern, electronically operated car retarder at the Reading's Rutherford classification yard, near Harrisburg, is controlled with the flick of a switch by the towerman. Controls also set proper switches for cars as they "come over the hump."

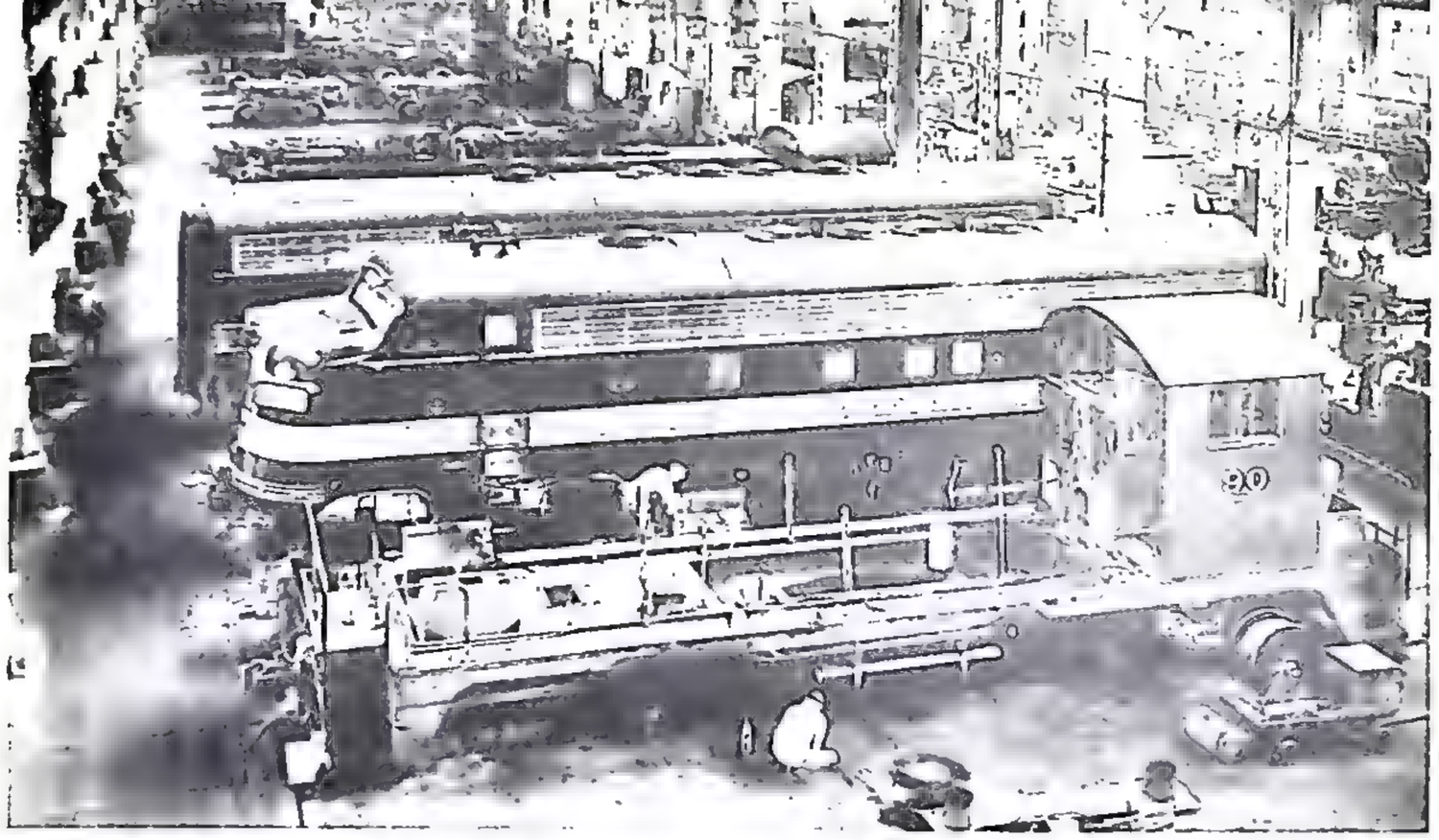
The huge Saint Clair yards, through which pass thousands of tons of hard coal annually, is in the heart of the Pennsylvania anthracite region. Modern shops for repair of cars also are located here, shown at center left of picture.



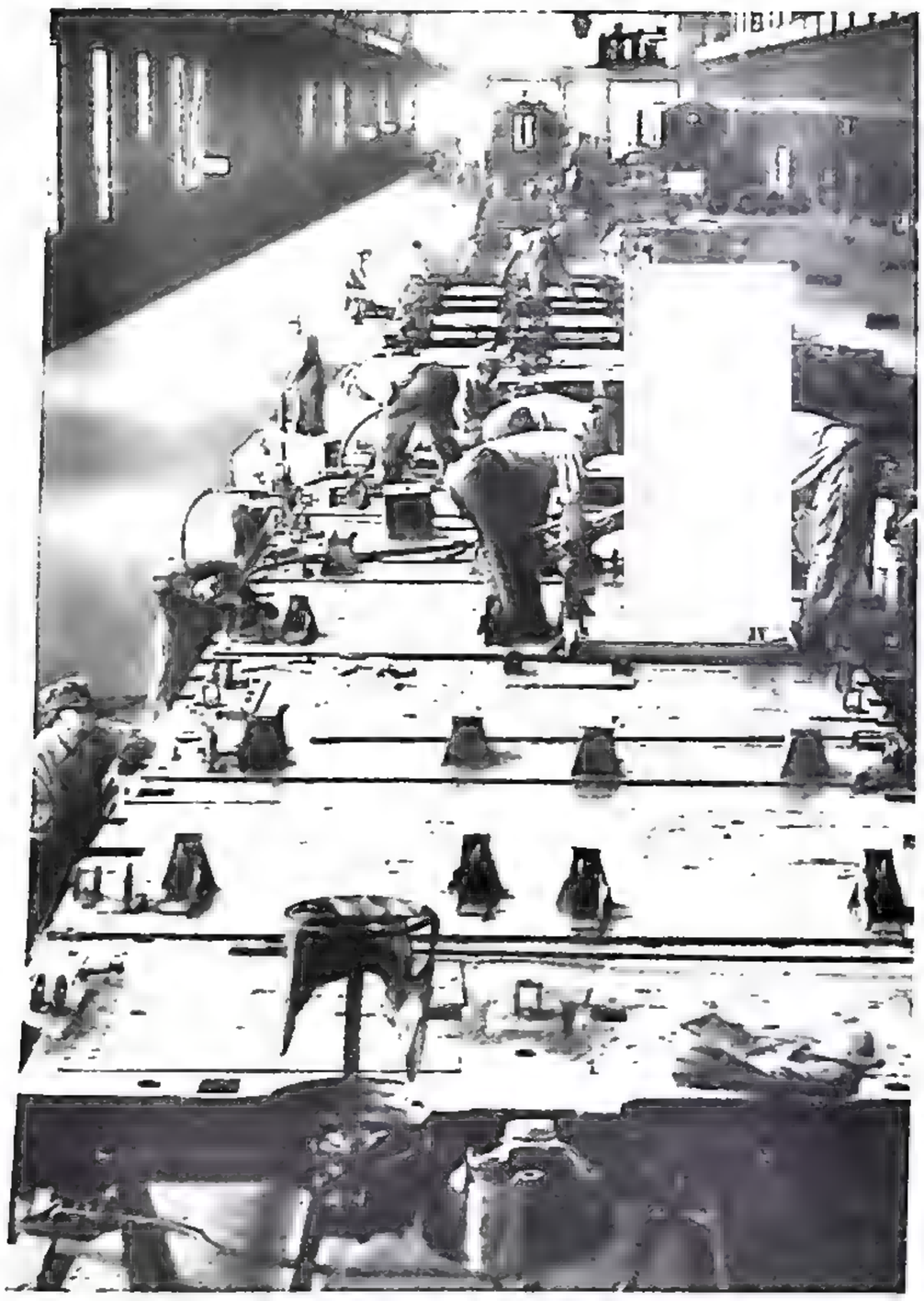
This new bridge near Phoenixville, Pa., was built to serve the Philadelphia Electric Company's big Cromby generating plant where electric power is produced for industrial and residential consumers of the Greater Philadelphia area.

Loading scrap iron into the hold of a freighter at Pier G, Port Richmond, these three 50-ton gantry cranes are a vital facility on the Reading System. Port Richmond has the best heavy-lift facilities of any pier on the East Coast.

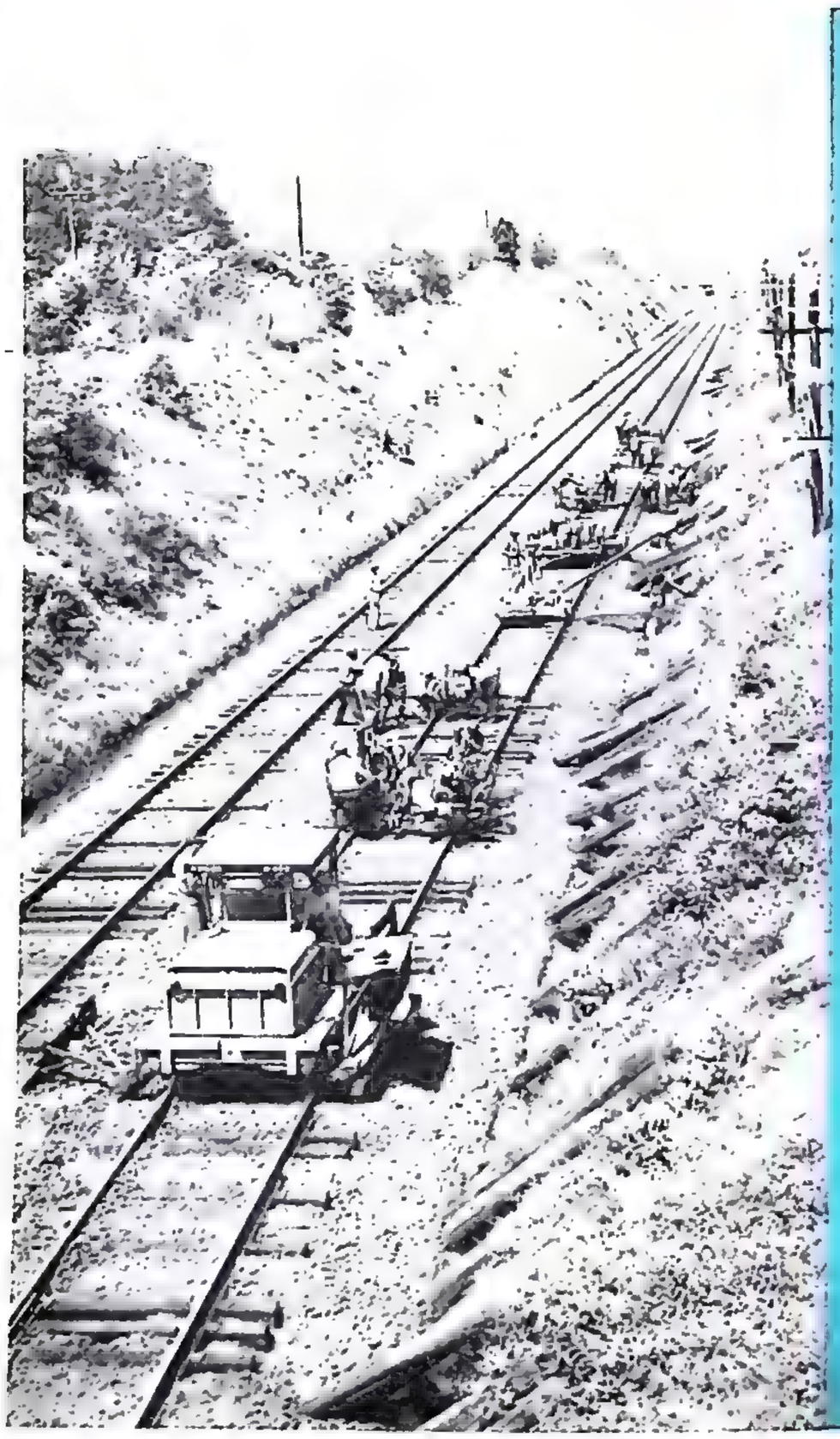
Passing the Statue of Liberty on Liberty Island in the harbor of New York, the powerful Reading tugboat *Tamaqua* is headed for a payload at Port Reading, N. J.



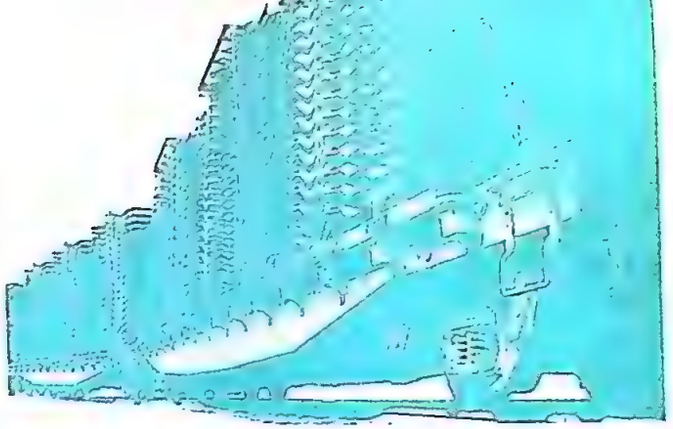
Extending more than a mile and covering 86 acres, the huge locomotive and car shops at Reading, Pa., are among the most modern in America. Here, diesel locomotives are shown undergoing repairs in a bay of the locomotive shop. Every locomotive is checked periodically to make certain it is in efficient operating condition.



Keeping rolling stock in tip-top repair, and building and rebuilding freight and passenger cars, is an important job on the railroad. Here, at the car shops in Reading, workmen check tie-down equipment on a flat car. Assembly-line techniques with the latest types of tools and equipment are used here to process cars.



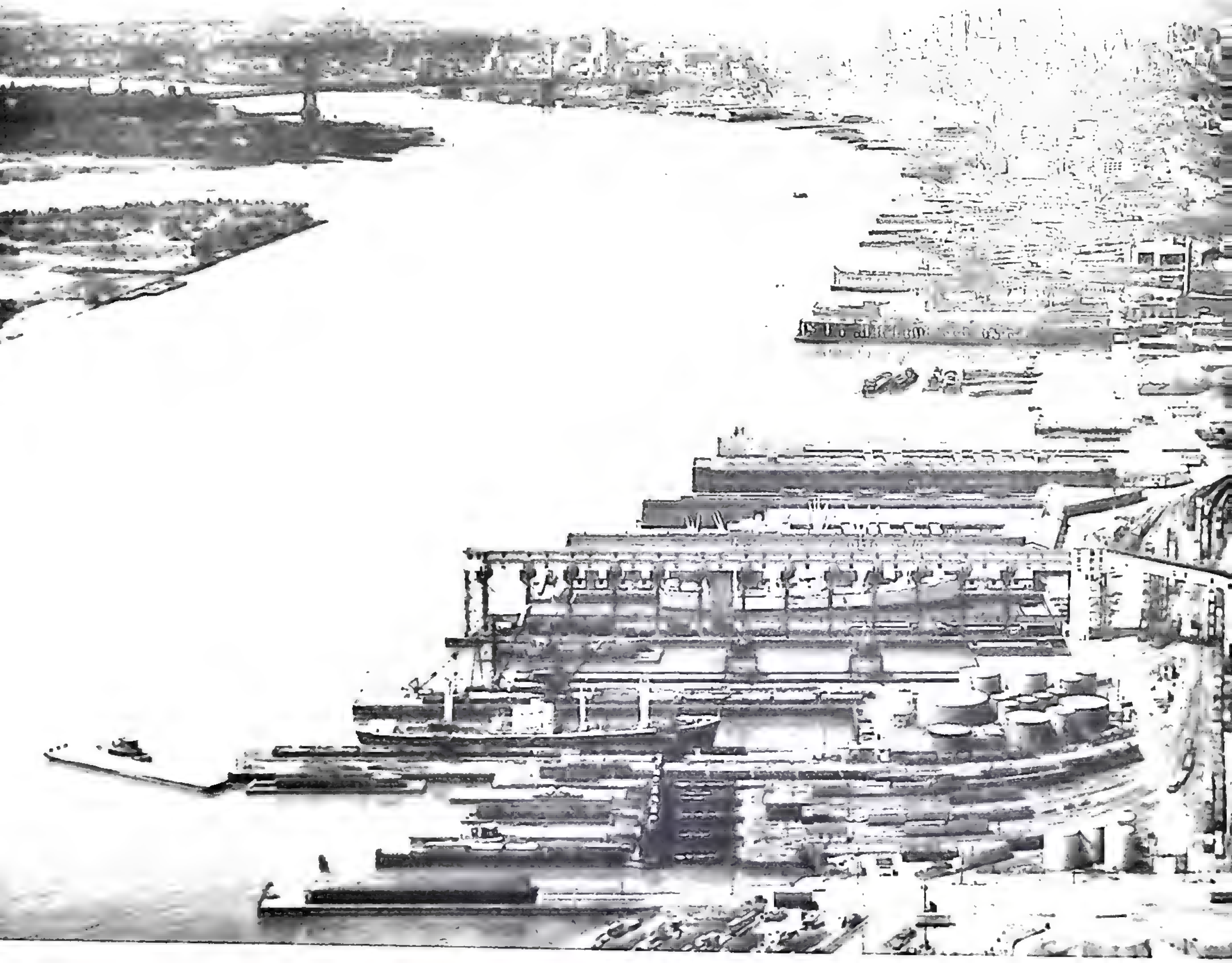
Speeding up the work of maintenance of way of the railroad, this line-up of modern machines is shown in operation on tracks of the New York Short Line, north of Philadelphia.



Providing a striking photograph, these flat car loads of automobile frames are a familiar sight on Reading freight trains, bound for assembly plants in many parts of the Nation.

Trailer-on-flat-car is one phase of the Reading's complete transportation service to shippers. It operates between some 226 points on the Reading lines and several thousand points in various parts of the Nation. At right is one of the many vehicles of the Reading's truck and bus fleet which serves points not directly reached by the railroad.

This new cutoff, between the Lebanon Valley-Reading Belt Line and the Blandon low grade line, near Reading, permits freight trains to bypass the City of Reading. It was part of a multi-million-dollar improvement program of the railroad in the Reading area.



This new aerial portrait of the Reading's Port Richmond Marine Terminal graphically displays the mile-long facilities, with 12 modern piers, yard facilities for more than 5,500 railroad cars and the skyline of Philadelphia in the background.

PORT RICHMOND . . . Crown Jewel of

Port Richmond is one of the great marine terminals of the United States, and the largest railroad installation of its type in the world. It is the Reading Railroad's gateway to global trade and commerce and a major facility of the Port of Philadelphia, America's No. 2 port.

Serving rail-marine shippers since 1842, but always keeping abreast of the latest equipment and techniques, Port Richmond is well known for its commodious piers, protected berths and deep-water facilities less than 90 miles from the Atlantic Ocean.

All-Time Record

Supporting 12 modern piers are 85 miles of railroad in a huge yard linking the port by rail with every part of the Nation. Through these busy piers, in 1956, flowed more than 4,000,000 tons of coal, ore, grain, scrap iron and other products carried in 1,287 vessels—an all-time record for Port Richmond.

Key facilities of Port Richmond are: a coal dumper with a capacity of one car every two minutes; a 2,500,000-bushel grain

elevator loading vessels at the rate of 25,000 bushels an hour; four ore docks which handle 600 tons an hour, and three new 50-ton travelling cranes which give the Port the heaviest lift facilities of any piers on the East Coast.

Four Covered Piers

In addition, four covered piers at Port Richmond and two at Noble Street, nearby, provide 780,000 square feet of space, all of which is easily accessible by rail for all-weather loading and unloading of freight cars.

The depth of the main channel of the Delaware is 37 feet . . . to which pier berths are kept dredged at all times . . . and Congressional authorization was obtained in 1957 for dredging the channel to 40 feet in the immediate future, giving access to even larger vessels.

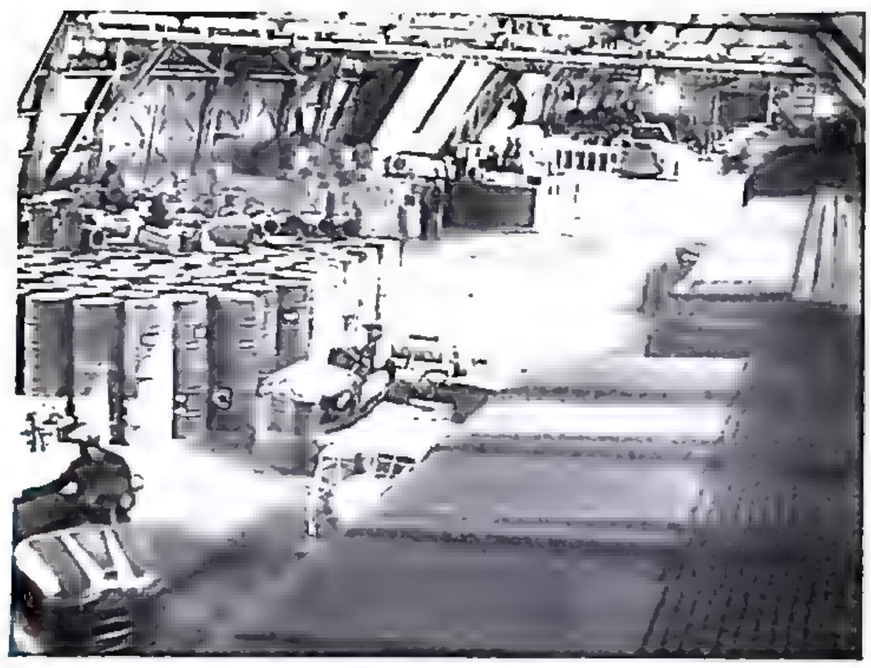
Plans are under way for improvement and enlargement of facilities for handling coal, ore and other commodities, adding to the wealth of services provided by Port Richmond for a wide cross-section of shippers, around the clock, throughout the year.

the Reading System

One of the newest facilities at Port Richmond, these 50-ton gantry cranes, combined with 75-ton and 100-ton cranes nearby, give the terminal the best heavy lift equipment of any port on the Atlantic Seaboard. These cranes, towering 130 feet, can be fitted to handle a wide range of cargo, from scrap iron to iron ore.

PORT RICHMOND *continued . . .*

Port Richmond's busy Pier 18, equipped with a modern coal dumper, unloads coal into barges and the holds of ships, and returns empty cars to the yard at the rate of one car every two minutes. Experimental use of television points the way to an even more modern system of controls for the speedy trans-shipping of coal.

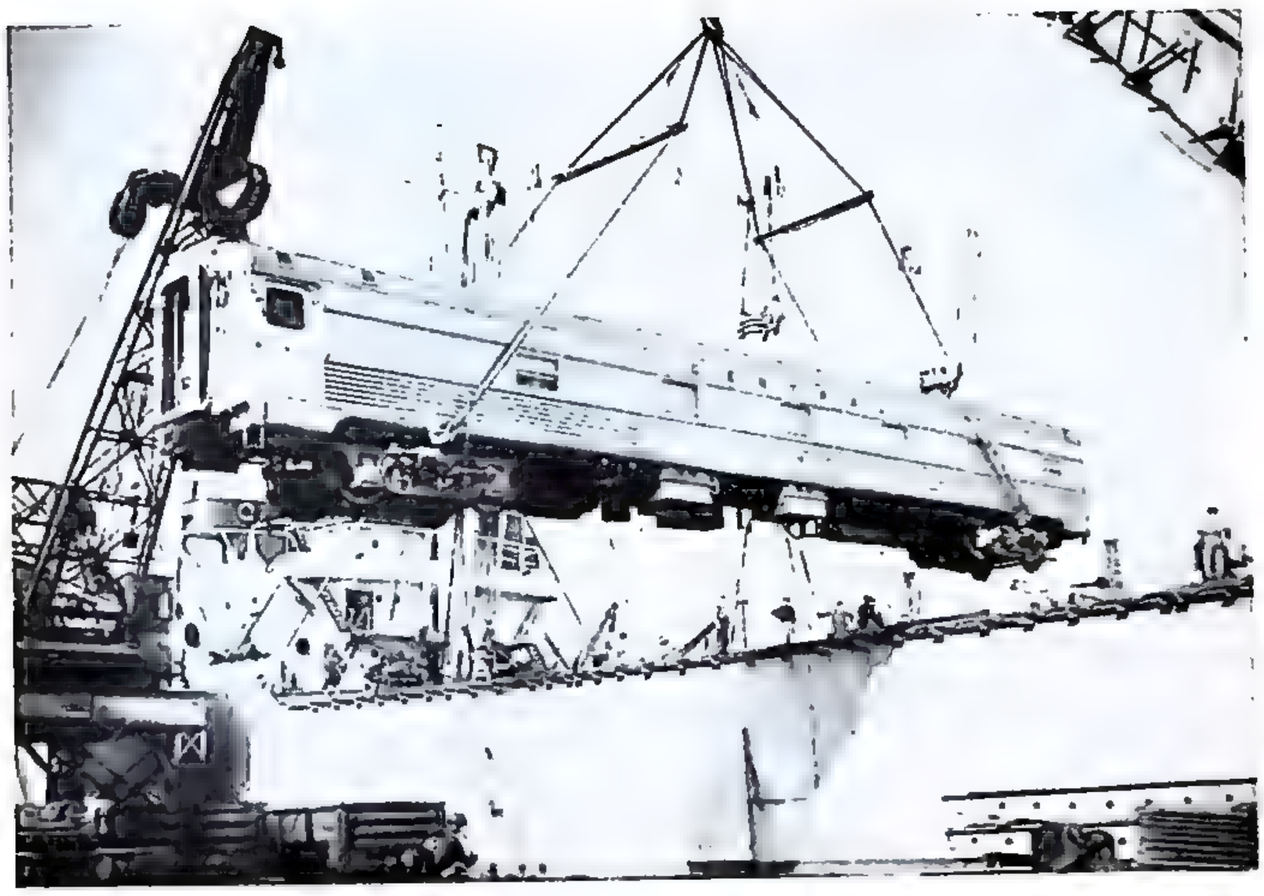


Freight cars run onto pier over depressed tracks for undercover, floor-level loading and unloading. Mechanized movement guarantees speed in distribution and classification of shipments.

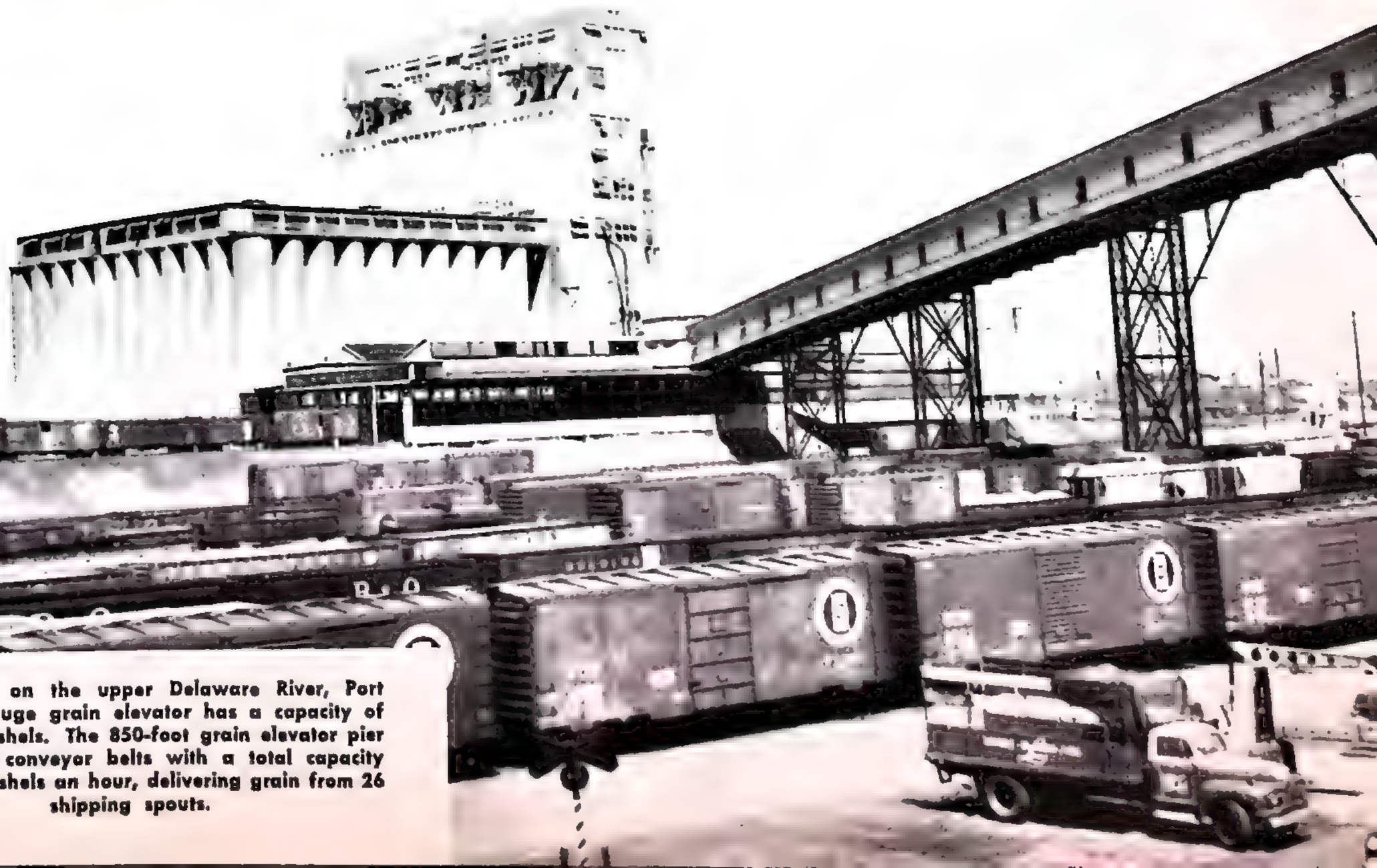
Framed by eight railroad tracks and the huge ore unloaders of Port Richmond's Pier 14, this ship is one of the many bringing ore from far-off points for trans-shipment by rail to the steel mills of the East Coast. New facilities are planned here to increase speed of handling ore by as much as 85 per cent.

Reflecting the versatility of the Reading's marine facilities in the Port of Philadelphia, slings lift a wide variety of cargo directly to and from the holds of ships flying flags from every corner of the world.

Four merchandise piers at Port Richmond, with nearly 800,000 square feet of space, are provided with the latest facilities for all-weather handling of rail-ship freight.



Stainless steel passenger cars for a South American railroad are typical of the heavy lifts from rail to ship at Port Richmond's recently enlarged Pier G.



A landmark on the upper Delaware River, Port Richmond's huge grain elevator has a capacity of 2,500,000 bushels. The 850-foot grain elevator pier contains six conveyor belts with a total capacity of 90,000 bushels an hour, delivering grain from 26 shipping spouts.

Three modern 1,600-horsepower diesel power tugs owned by the Reading operate in New York harbor. The 110-foot vessels, named after major cities on the Reading System, tow barges carrying millions of tons of coal annually for utilities of the New York Metropolitan area from the Company's Port Reading, N. J., coal pier.

THE READING FLEET...

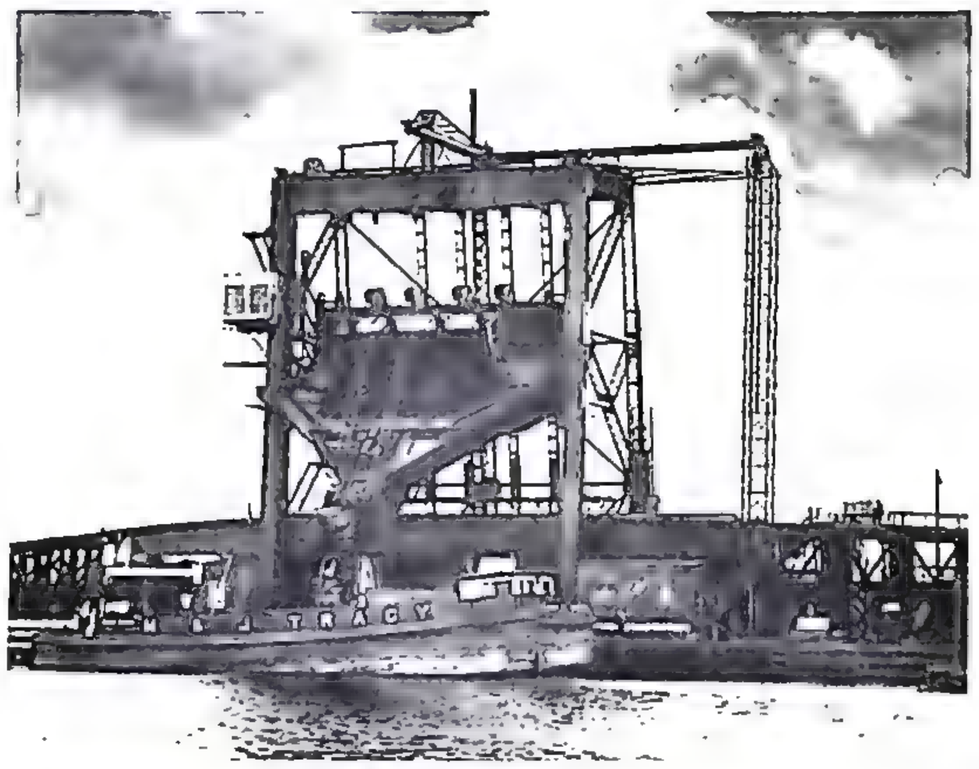
The Reading Railroad's "navy" is a vital part of the Company's operation in the Ports of New York and Philadelphia.

A fleet of six powerful tugboats operates in the two harbors, hauling coal barges to electric utilities and other industries in the Metropolitan New York area, and carfloats and barges in the Port of Philadelphia.

Three new 1,600-horsepower diesel tugs—the *Shamokin, Pottsville* and *Tamaqua*—named after important on-line cities in the anthracite region—operate in New York harbor from the Company's Port Reading coal dumper, pulling barges and barge flotillas of from 800 to 10,000 tons dead weight.

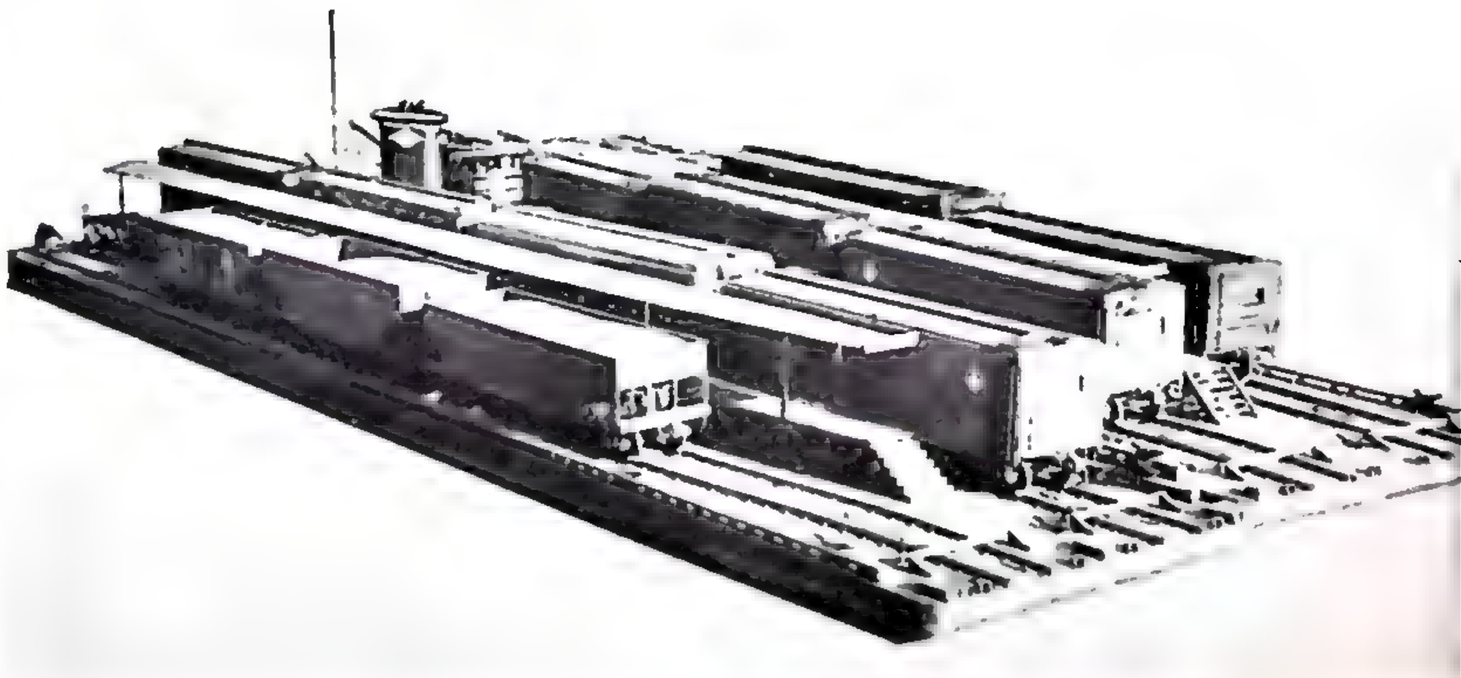
In 1956, more than 3,600,000 tons of coal were handled from Port Reading by these tugs and barges, about 27 per cent of the tidewater coal transferred from rail cars to barges in the New York region. In one day, early in 1957, the coal dumper at Port Reading handled 473 cars of coal, a new record.

In Philadelphia, tugs push carfloats from a "float bridge" at the Port Richmond terminal across the Delaware River to New Jersey, linking the growing Southern New Jersey region with the Philadelphia port and the West. A considerable volume of coal also is handled by tugs and barges from Port Richmond's coal dumper for local utilities.

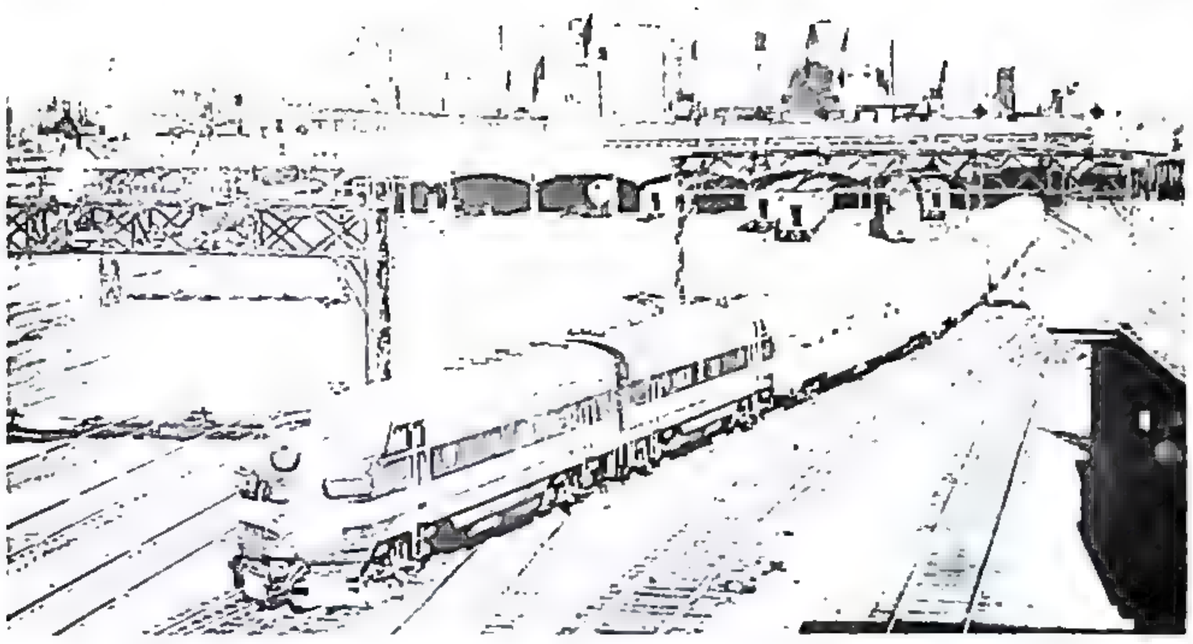


The Port Reading, N. J., coal dumper of the Reading Company, serving the Port of New York, transshipped 3,600,000 tons of coal during 1957, or about 27 per cent of the tidewater coal transferred from rail cars to barges in the area during the year.

A bird's-eye view of the wake of the Reading Railroad tug *Shamokin* as it outsprinted all opposition to win the International Tugboat Race in New York harbor for two consecutive years. The *Shamokin* and sister tugs deliver coal barges from Port Reading to points in New York City.



These carfloats, propelled by a Reading tug, are typical of a Delaware River operation which ships thousands of tons of freight annually between Philadelphia and Southern New Jersey via rail and river.



With the skyline of New York City in the background, the Reading's famous *Crusader* express pulls out of the Jersey City terminal for Philadelphia. This stainless steel streamliner, first train of its kind in the East when it entered service, has been renovated to keep pace with modern transportation needs.

The Reading Railroad handled the largest peacetime volume of passengers in its 125-year history during the 1957 Boy Scout Jamboree at Valley Forge, Pa. Some of the passengers—a group of arriving Boy Scouts from the Mid-West—are shown happily pointing out the sights as they near the Valley Forge Station.

PASSENGER SERVICE

Courtesy is a byword on Reading Railroad passenger trains . . . continuing a tradition of friendly service existing for more than a century.

From the well-known inter-city expresses, such as the *Crusader, King Coal, Wall Street, Schuylkill* and *Black Diamond* to the fleets of electric commuter trains operating in the Greater Philadelphia suburban service, passenger train personnel bear out the Reading's title of "The Friendly Railroad."

400 Trains a Day

More than 13,000,000 passengers rode the Reading in 1957, along with thousands of tons of mail, baggage and express, which are also an important part of the passenger service picture. An average of 400 passenger trains a day operate over the Reading System.

The Reading's most famous train, the stainless steel *Crusader*, celebrated its 20th birthday in December, 1957. The first train of its kind in the East, this streamlined beauty recently underwent its fourth extensive overhauling, keeping pace with modern decor and furnishings.

Jenkintown Busy

Hub of the passenger service is the huge Reading Terminal, through which more than 50,000 passengers pass daily. Many of these ride to and from work on scores of commuter trains operating over suburban Philadelphia lines. Busiest suburban station of all is Jenkintown, eight miles north of Philadelphia, where 142 trains daily arrive and depart from one of the most modern and beautiful stations on the Reading System.

In the summer of 1957, passenger trains carried an all-time single event high of 119,000 passengers for the Boy Scout Jamboree at Valley Forge, Pa. This included 90,000 passengers on 64 fifteen-car shuttle trains carrying Scouts on sightseeing tours to Philadelphia.

Courtesy is a byword with Reading train crews. Here, typical of service Reading provides for passengers, a conductor helps a lady from a train.

Luxury and comfort go hand in hand for passengers of the Reading's famous *Schuylkill*, operating between Philadelphia and Pottsville. Passengers dine and relax in the train's modern grille car.

More than 50,000 passengers pass through Reading Terminal, Philadelphia, every day. This week-day throng has just arrived on one of the hundreds of commuter trains operating between the Terminal and suburban Philadelphia points.

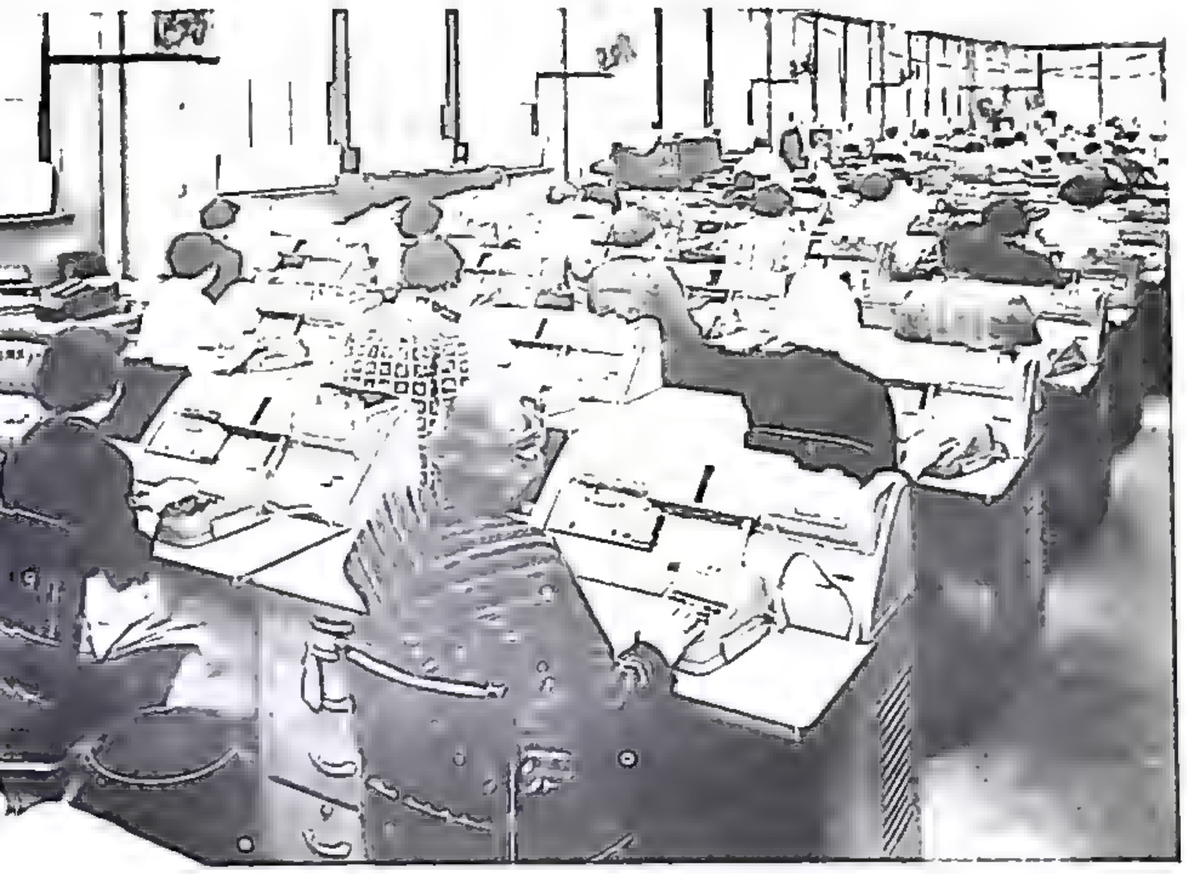
MEN AT WORK

More than 128 different job classifications are represented among the nearly 14,000 employes of the Reading System. These men and women and the jobs they fill are the bone and sinew of the railroad. On trains, in shops and yards, and in stations and offices, they represent occupations ranging from tinsmithing to the operation of the accounting systems. Collectively, they contribute daily to the safe, smooth, on-schedule movement of people and materials by the Reading.

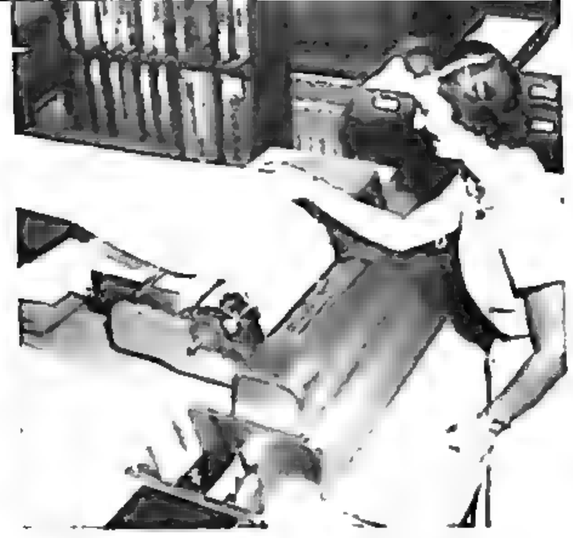
Pictured here are a few of the men and women whose jobs are part of the operation of a great railroad.

Nerve center of the railroad is the dispatcher's office where train movements are plotted and directed by radio-telephone and teletype contact with all points on the railroad. A dispatcher contacts a distant point as the chief dispatcher looks on.

This is not a man from Mars but a welder at the Reading Locomotive Shops.



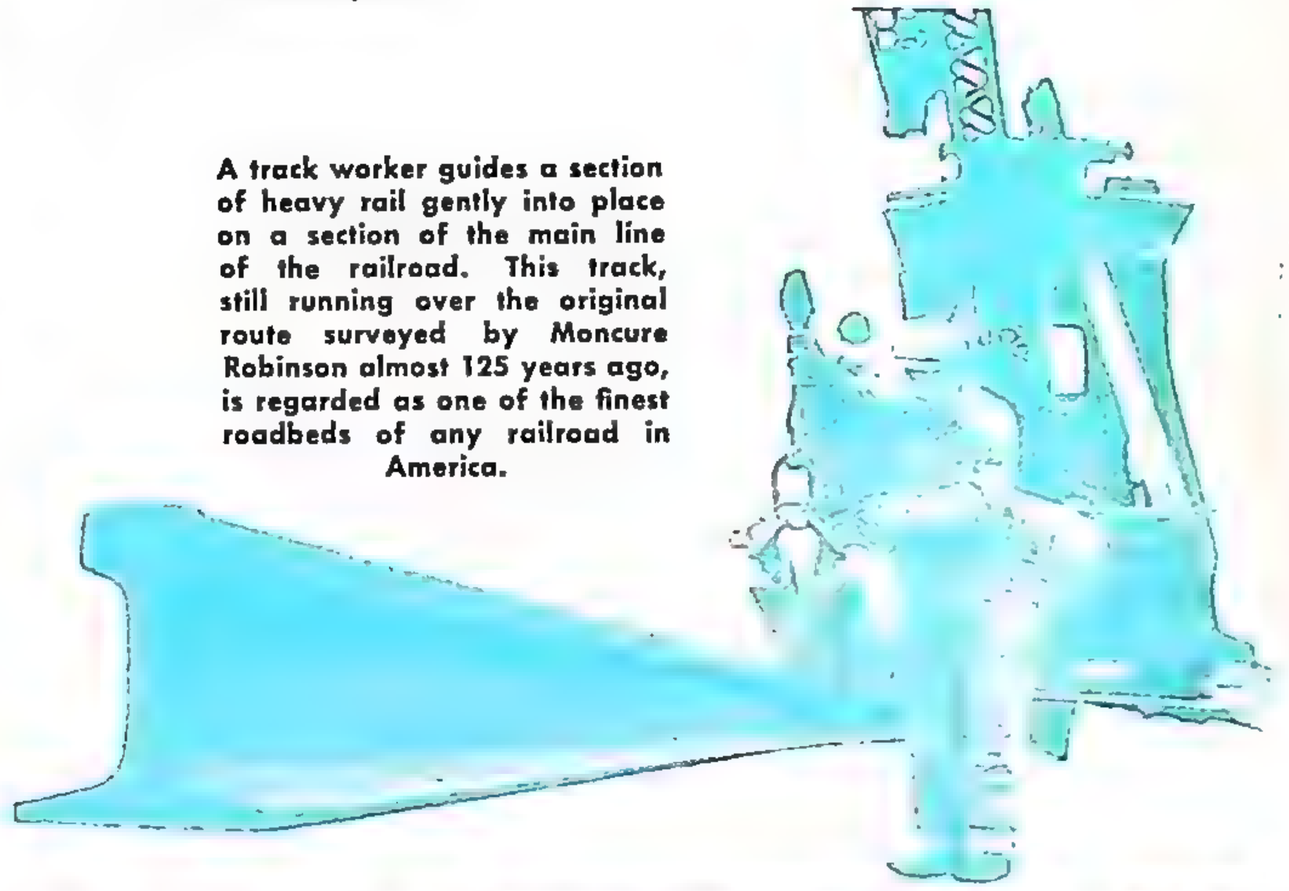
Modern office equipment, automatic computing and bookkeeping machines, make the clerical routine a less tedious, more accurate procedure.



This office employe is overseeing a new tabulating machine which is part of the modern equipment at the general offices in Philadelphia.

A vast teletypewriter network links distant points on the railroad with a flick of this operator's fingers.

A track worker guides a section of heavy rail gently into place on a section of the main line of the railroad. This track, still running over the original route surveyed by Moncure Robinson almost 125 years ago, is regarded as one of the finest roadbeds of any railroad in America.



Rubber gloves are just one of the items of equipment used on the Reading which are tested regularly at the Company's research and testing laboratories in Reading.

Safer, more rapid welding procedures have been installed at the Reading Shops. Progressive-stage platforms, not unlike endless belts, promote speedy repair and alteration of Reading rolling stock.

Air brakes must not fail and this brake tester uses a wide range of equipment and gauges to make doubly sure of their safety.

Keeping freight and passenger cars in good repair, and building and rebuilding cars as required, is the assignment of the car shops. Here, a workman drives home a rivet in the side of a box car.

This spike-driving crew is making fast work of an operation formerly done for generations by hand. With this and other modern machines, track maintenance is performed with greater efficiency and assurance of safety than ever before in railroad history.

Mechanization of right-of-way maintenance extends even to spike pulling, demonstrated by this member of a track force using a new gasoline-driven machine.

This veteran conductor has more than 50 years of service with the railroad. He is typical of the long service and devotion to duty which is a byword among Reading employes. More than 5,000 of them have 30 or more years of service.

The Reading's system of rapid and safe passenger handling is keynoted by the voice of the train caller, who now uses the most modern, easy to understand, amplification system.

Car repairmen employing a wide variety of special skills are shown at work on a recent overhaul of the Reading's crack passenger train, the *Crusader*, at the car shops in Reading. The all stainless steel beauty was given an entire "new look" throughout its luxurious interior. All passenger cars are given periodic overhaulings and thorough inspection here.

These men are giving a periodic overhaul to one of the more than 360 diesel units of the railroad at the huge locomotive shops in Reading. The Reading is now completely dieselized in freight service and long-distance passenger runs; operates a large fleet of electric commuter trains in the Philadelphia area.

Effective railroading depends on teamwork. Switching and yard operations, particularly, demand full co-operation between crew, train and track.

Maintaining intricate electronic equipment for the control of signals and switches such as this battery of coding equipment at Oley Tower, near Reading, requires skilled hands and alert minds.

Actual operating equipment—such as switches, signals, brakes—are employed in the Central Training School at Reading, Pa., to give new employes of the railroad a sound foundation in the work they will undertake. Here, a new class receives instruction in method of throwing switches.

Visual aids are used in training programs throughout the Reading System. Students are shown here viewing a motion picture on safe operating practices on the railroad.

TRAINING

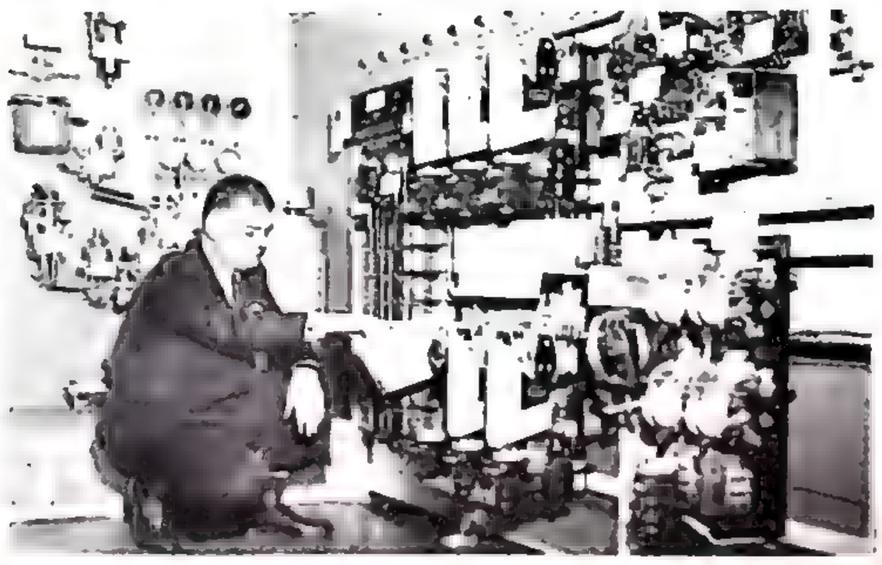
for a better Railroad

Training programs for a wide cross-section of employes are vital for job improvement, more efficient operation of the railroad, and, above all, for safety.

Thousands of employes annually take part in training of some type, ranging from newly employed apprentices in the System's shops to management and public speaking training of aspiring young executives.

Management training courses for supervisory personnel are held at regular intervals to provide better insight into the operations of the railroad. These courses are conducted under the direction of Pennsylvania State University.

Top-flight police officers address classes of the Police Academy of the railroad, designed to improve efficiency of the guardians of the Company's property and equipment. This class of Reading policemen is being addressed by Chief Inspector Albert J. Trimmer, of the Philadelphia Police Department.



A school on wheels is the Air Brake and Diesel Instruction Car, filled with a battery of working equipment to teach employes up-to-the-moment operating techniques. Shown here is a working set of electrical equipment which controls the flow of electricity to locomotive traction motors. These react to the diesel controls in the background.

Included among the training equipment are "schools on wheels" —the Air Brake and Diesel Instruction car and two cars for teaching methods of preventing loss and damage to freight shipments. The former holds a full set of controls of a modern diesel locomotive, air brakes for both locomotives and cars, and a battery of electrical devices for the instruction of locomotive and train crews.

At the well-equipped Central Training Center at Reading, Pa., instruction with scores of working models of cars, switches, brakes, couplings, signals and other equipment is given in railroad practice in general, and safety in particular.

The apprentice training program at the locomotive and car shops constantly is turning out skilled new hands following an intensive four-year instruction period. Even the Reading's policemen go to school and many of the nearly 150 police officers are graduates of the new Reading Company Police Academy or courses given by other police agencies.

The Reading Branch of the Reading Company Y.M.C.A. is the largest of four Y.M.C.A. buildings throughout the System. Here, dormitory, recreational and eating facilities are provided for employes, and scores of gatherings are held in the auditorium and other meeting rooms.

READING PEOPLE . .

The Reading is a happy family. Employes participate in a wide variety of community and Company activities and are respected citizens of the neighborhood in which they live. Many are leaders in civic and fraternal affairs, which is encouraged by the company.

Within the company circle, family safety rallies and divisional picnics attract the largest segment of employes, wives and husbands, and their children. Safety on the job, in the home and on the highway is stressed not only for the Reading wage-earner, but for all family members, at these safety rallies. The railroad is proud of its safety record, and has won four Harriman Awards as the safest railroad in the East during the past eight years.

The company operates four Y.M.C.A. branches at points throughout the System, where meals, lodging, entertainment and meeting-places are provided. The Philadelphia and Reading Relief Association, with a membership of upwards of 16,000 present and retired employes, has paid out nearly $27,000,000 in benefits since it was founded in 1888. Numerous organizations encourage service in educational, religious, athletic and social activities of the community. These include the Reading Company Choral Society, which is well known for its Easter and Christmas concerts in the Reading Terminal waiting room, the Boosters' Club, the Veteran Employes' Association, Craftsmen's Club, League of the Sacred Heart, Reading Company Athletic Association, St. George Association, numerous bowling leagues, and a number of others.

Generous in their contributions to worthy causes, Reading employes also periodically donate blood to replenish supplies of the American Red Cross blood bank.

An example of the relationship between Reading employes and the public is this scene in which a retiring conductor was honored on his last run by the passengers he had served for so many years.

Family safety rallies such as this, held in Philadelphia, attract thousands of employes and members of their families in key cities each year. Theme of the meetings is emphasis on "total" safety—on the job, at home and on the highway. The railroad won three National Safety Council Awards in four years for its safety programs.

The Reading Company Choral Society is well known for its public concerts in Reading Terminal during the Easter and Christmas seasons. The chorus of some 50 Reading men and women also appears at other special events throughout the year.

This "church on wheels" offers interdenominational services one day each week for employes at a car shop in Philadelphia. An average of 20 employes attend each service.

The Reading's employes and their families give generously in time of disaster. During the heavy floods following Hurricane Diane, in 1955, thousands of items of food and clothing were donated for flood relief for victims in stricken areas along the Delaware River.

The youngsters always have a wonderful time at the Reading's family picnics held throughout the System, as this foot race can attest.

This baseball game is typical of the sports sponsored by the Reading Company Athletic Association at its diamond near the Tabor Station of the railroad. Many employes take part in recreational activities of the Association.

Bowling is a favorite pastime of Reading employes, some of whom are shown in action in a mixed league. A large number of employes are members of Company teams, or leagues, in many communities served by the railroad.

Enjoying a home-cooked meal out-of-doors is one of the high points of the many family picnics staged by employes of the railroad each year. Everybody, from top officers to tiny tots, attends these rallies during the summer at parks throughout Eastern Pennsylvania.

International Paper Company.

Progress Manufacturing Company.

Grace Mine, Bethlehem Steel Company.

General Electric Appliance Company.

National Biscuit Company.

THE HEARTLAND OF INDUSTRIAL OPPORTUNITY

One of the most important jobs on the Reading is that of helping to attract new industries to the territory served by the railroad—an area with a promising future and the second largest concentration of business and population on the Atlantic Seaboard.

Representatives of the Industrial Development Department, freight sales forces in key cities throughout the Nation, and individual employes all are on the alert to firms looking for new locations. They know that the railroad's prosperity is directly linked with the health and vigor of the towns and cities along its right-of-way and that the economy of most of these municipalities, and the area surrounding them, is dependent in great degree on the stature of its commerce and industry. Thus, the Reading is very proud of serving one of the heaviest industrial concentrations of any railroad in America.

Much to Offer Industry

There is much to offer a prospective new industry in Reading-land: transportation and port facilities unexcelled anywhere in America; raw and semi-manufactured goods available within short haul and at low cost; adequate labor supply, including a high percentage of skilled workers, a high degree of industrial diversification, with 87 per cent of the various types of industries classified in the Census of Manufacturers located in the area; an expanding public utility industry which is keeping abreast of business needs and providing service at moderate cost; excellent water supply; and adequate housing, schools and other services for employes and their families.

Prospective new industries along the railroad's lines are given every possible assistance, and assured of speedy transportation of their products and raw materials via the Reading. The railroad currently is developing six planned industrial districts in various parts of the System.

Complete Presentation

Interested firms receive a complete presentation covering the requirements of the proposed plant, including every facet of the operation from labor supply, electric power and water to track and factory layouts and other vital services. The railroad's industrial developers also work closely with officials of other utilities, and state and local departments of commerce to help provide the best possible climate for the location of a new industry.

During the decade immediately following World War II, nearly 500 industries of every size and category located along the Reading System. This was no accident—surveys showed the combination of strategic location and a fine transportation system in the area served by the Reading was the best.

A COMPLETE TRANSPORTATION SERVICE

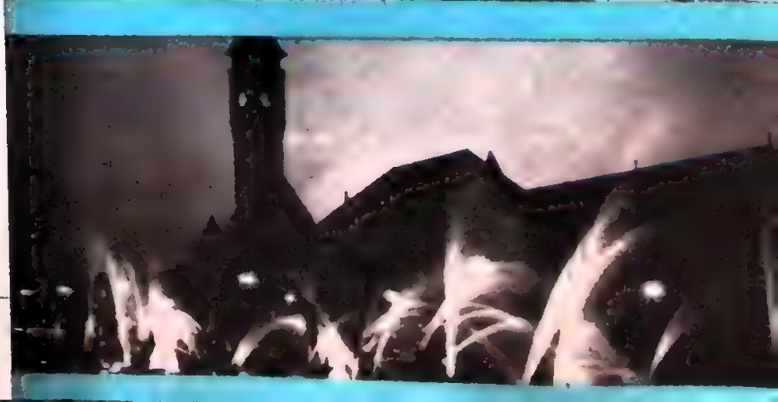
Linked With the Entire NATION

The Reading Railroad is linked with important centers of trade and commerce far beyond its lines through freight traffic representatives in major American cities. Other sales and service offices also are located in key cities on the Reading System.

No matter what the commodity, Reading representatives handle its shipment to or from the territory of the originating railroad. Lumber from the Northwest, citrus fruits from the South and Far West, grain from the Middle West, Christmas trees from New England and Canada, coal from West Virginia and Western Pennsylvania, iron ore from foreign points, and countless other products of our economy flow in and out of Reading-land.

Size is no obstacle to a shipment. Less-than-carload service carries smaller freight and the huge gondola and flat-car fleet of the Reading hauls enormous sizes of fabricated steel and other equipment, and trailer-on-flat-car service provides the flexibility of truck service with the railroad dependability. The Reading, literally, is equipped to carry "anything, anywhere, any time." It is a *complete* transportation service.

Major city off-line offices are located in New York, Boston, Atlanta, Buffalo, Pittsburgh, Cleveland, Cincinnati, St. Louis, Chicago and Detroit. Reading offices are also located in the important on-line communities of Allentown, Harrisburg, Reading, Trenton, Williamsport and Wilmington.



NEW DEVELOPMENTS...

Constantly seeking new ways and means to move freight and passengers more efficiently and safely, the Reading Railroad is employing the most modern equipment and methods available in the operation of its trains and properties.

Reading engineers are conducting their own research as well as co-operating with railroad suppliers in the development of a number of major industry innovations, including the revolutionary new "rail conditioner" to reduce slipping of locomotive wheels on rails, and the "hot-box detector" to electronically spot overheated journals on car wheels.

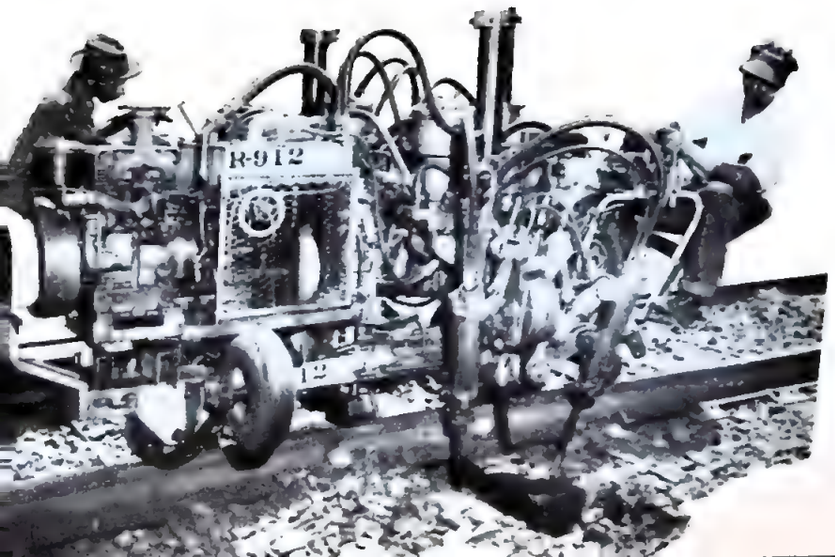
Throughout the railroad, from the laying of tracks to record-keeping in the general offices, science is playing an increasingly important role in the operation of the Reading.

Much of the burden of track maintenance has been removed from men's backs through mechanized equipment. And the electronic age has taken over in switches, signals, train control, and even in payroll computing, where an "electronic brain" turns out the payroll for virtually every employe of the railroad. Everywhere on the Reading, new machines are speeding the operation and economy of railroading.

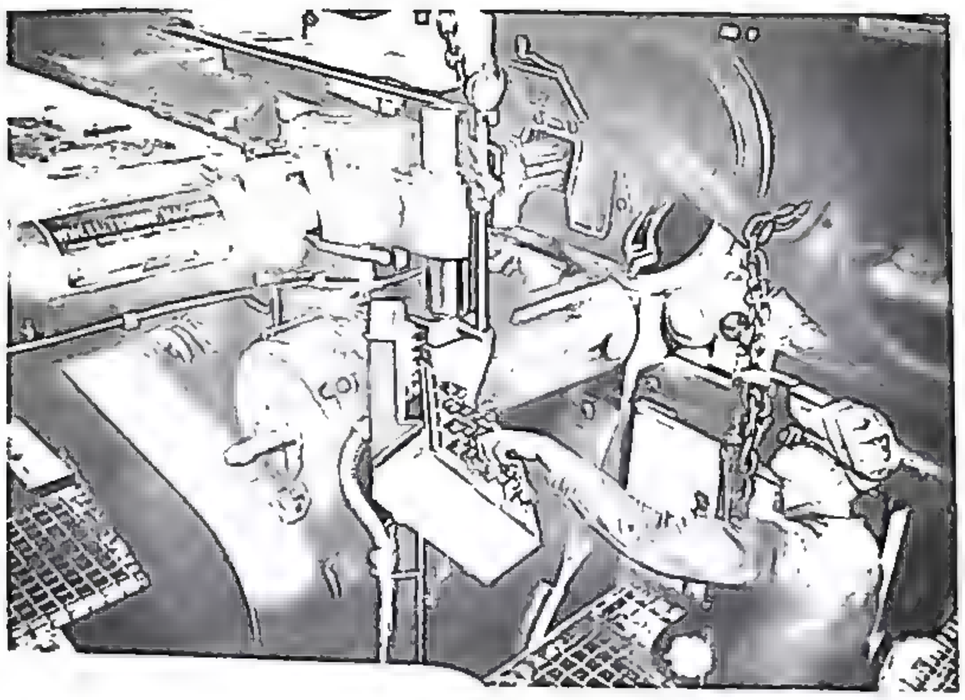
Another example of electronics at work on the railroad—the "audigage," a portable unit which inspects rail joints for possible internal flaws.

Ballast tamping machines, like this multiple-fingered rig, are part of the Reading's mechanization of maintenance-of-way equipment.

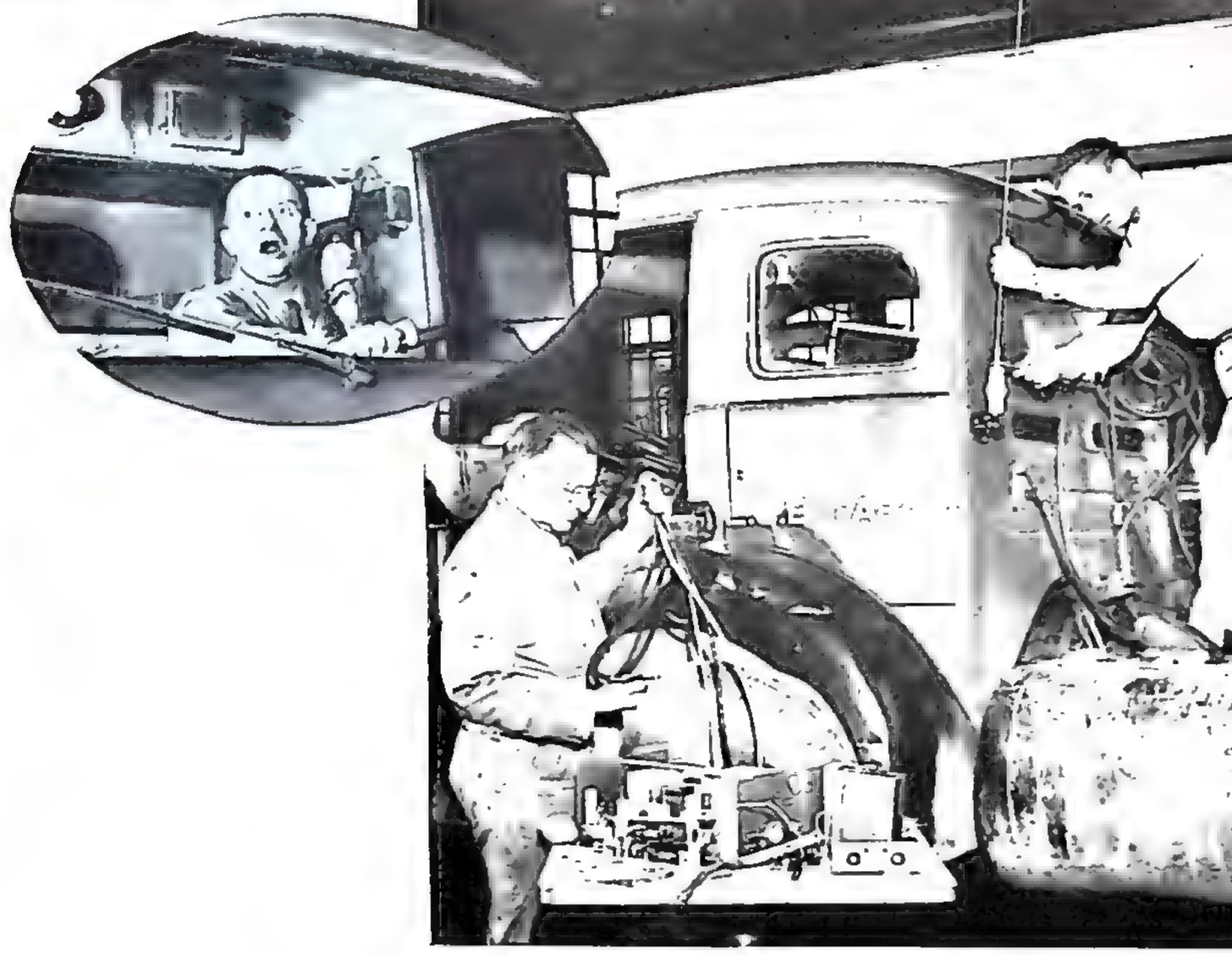
Guarding against overheated journals on car wheels is this electronic "hot box detector," operating on the New York Branch near Weston-Manville. System of thermal relays records temperature of each journal, and alerts nearby towerman when a "hot box" is detected.



These hydraquad tampers force ballast under ties, thus reducing uneven bed, and contributing to better drainage.



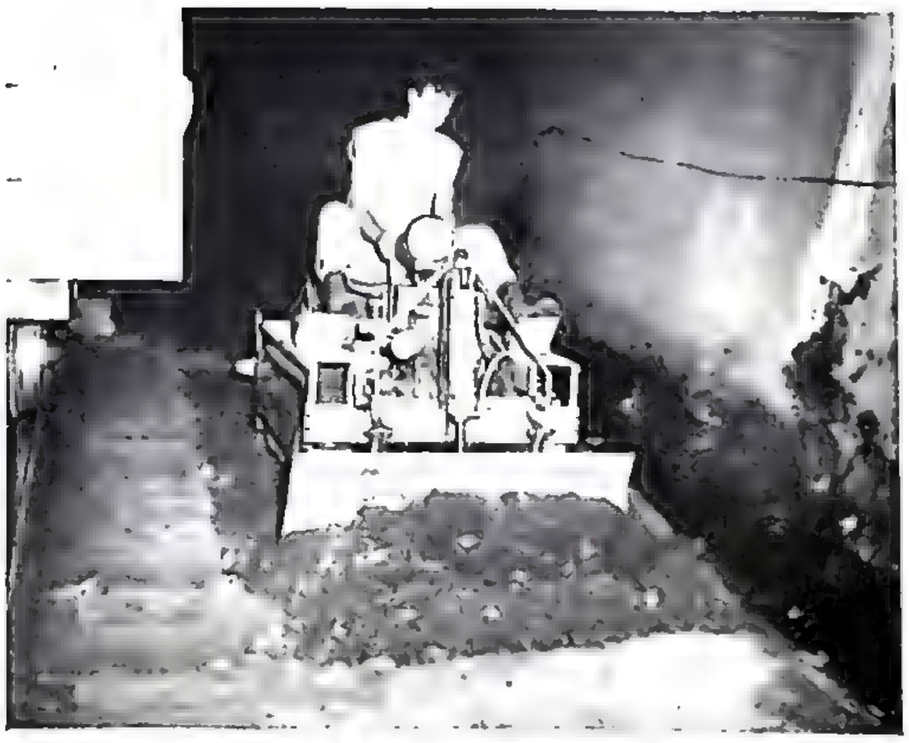
This new wheel truing machine automatically smooths and balances wheels without removal from cars or locomotives. Installed at the Reading Shops at a cost of $160,000, it increases the speed and efficiency of an operation formerly done on lathes.



Trucks of the Reading Transportation Company, truck-bus subsidiary of the railroad, feature latest type radio-telephone equipment to keep in constant touch with dispatching office and assure patrons the best in highway service.

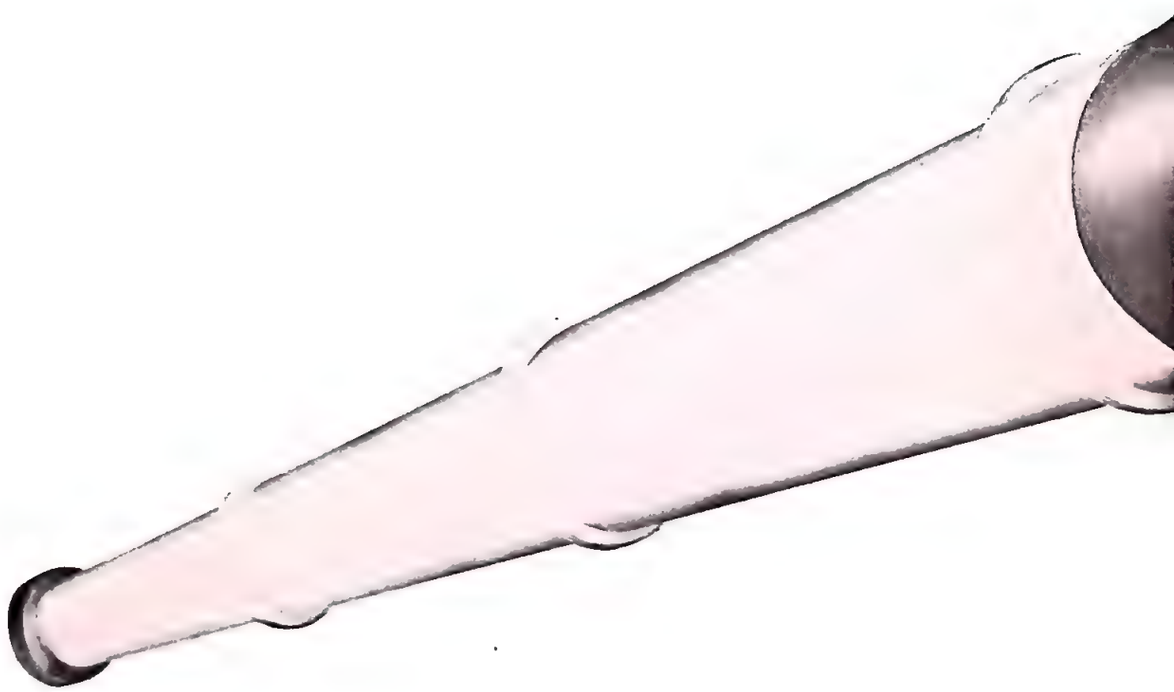
Telephones in the cabs of locomotives are another progressive step in the safer, more efficient operation of Reading trains.

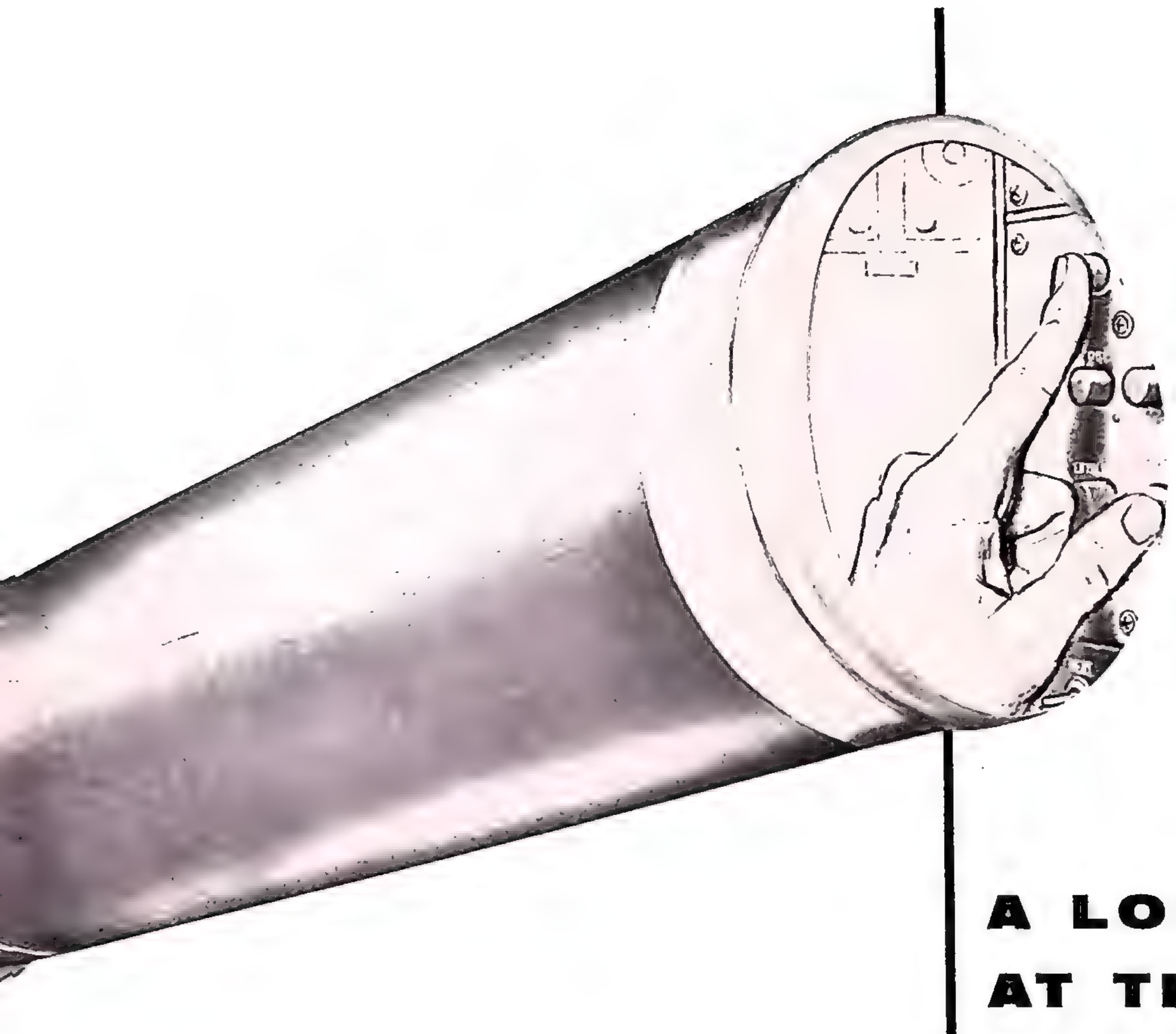
Reading research engineers pioneered in the development of a new "rail conditioner" to give a minimum increase of 25 per cent in adhesion limits of locomotives over present tonnage ratings. Developed in co-operation with two other industrial firms, the new chemical is sprayed on the rails by a motorized car. It is being tested on the Reading's mountainous Catawissa branch in North Central Pennsylvania.



The "Agricat"—a small tractor with bulldozer blade in front—at work in the historic Black Rock tunnel at Phoenixville. Its size and versatility enable it to work with ease in close clearances.

Developed by the Company in co-operation with a supplier, this multi-purpose unit for pole line maintenance does a number of jobs along the right-of-way. In addition to digging pole holes, it can be fitted with attachments which bore bolt holes, saw poles and lift poles into position.



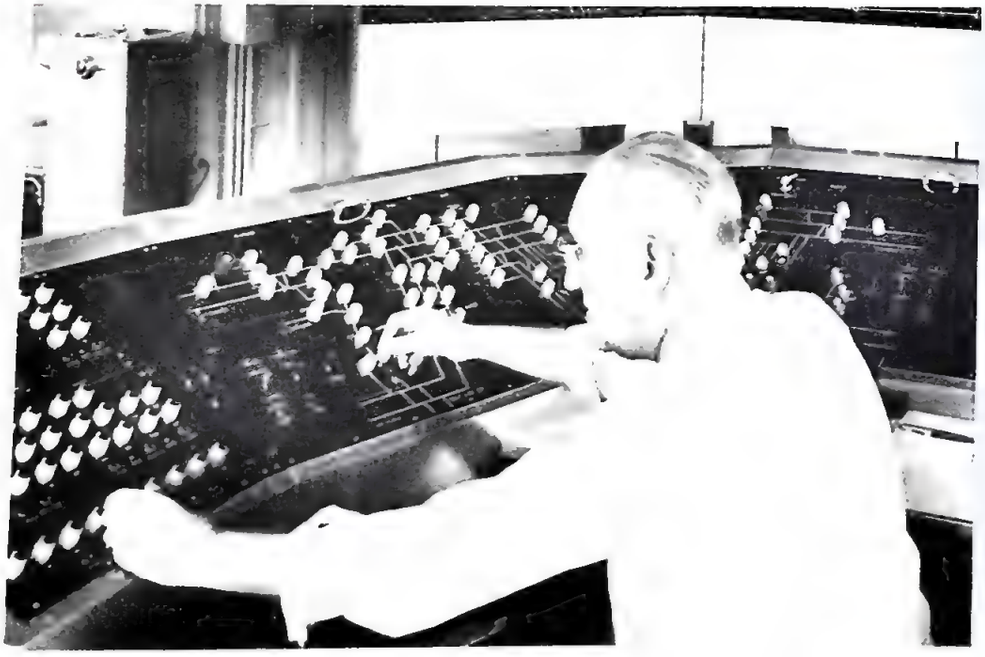


A LOOK AT THE READING RAILROAD OF TOMORROW

The constant search for newer and better methods of railroading has led to the wide use of electronics, the application of which has touched on virtually every phase of operation. This phase of railroad progress is perhaps best characterized by the push button, of which three typical uses are shown below. Such developments point the way toward the better railroads of tomorrow.

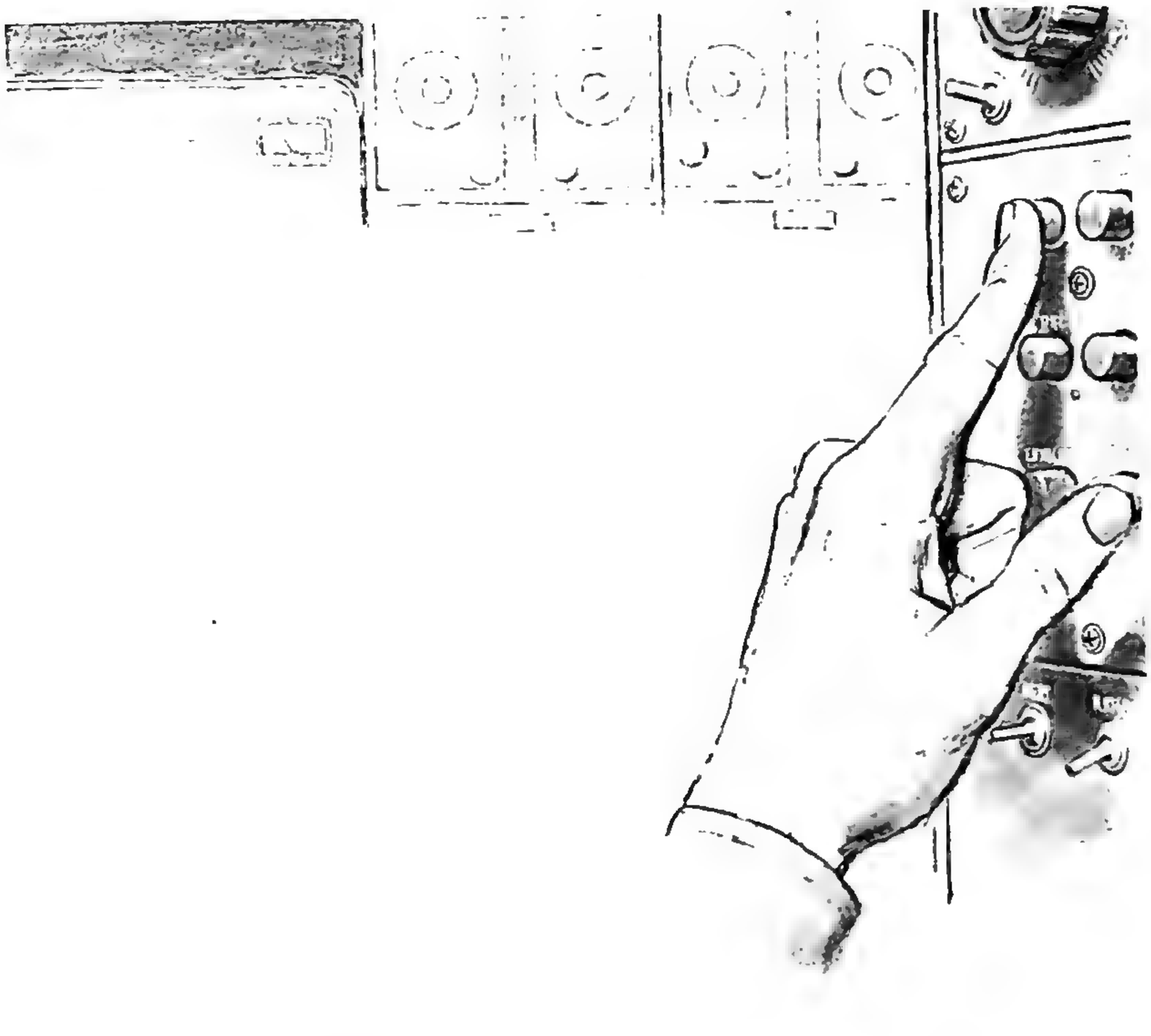
OVER THE TRACKS

Through consolidated interlocking machines, such as this one in Reading, Pa., trains are kept moving swiftly and safely through complicated yards and other busy points. By this method, an operator in a tower, knowing the track on which a train will enter the limits of interlocking and the desired exit, merely pushes buttons at the entrance and exit points on a model board. All switches and signals are immediately and automatically set to guide a train through a maze of tracks. On another board before him, the operator can see at all times the location of trains and condition of all switches and signals. Through the use of Centralized Traffic Control, similar in principle, trains can be directed over long stretches of track by one man through remote control.



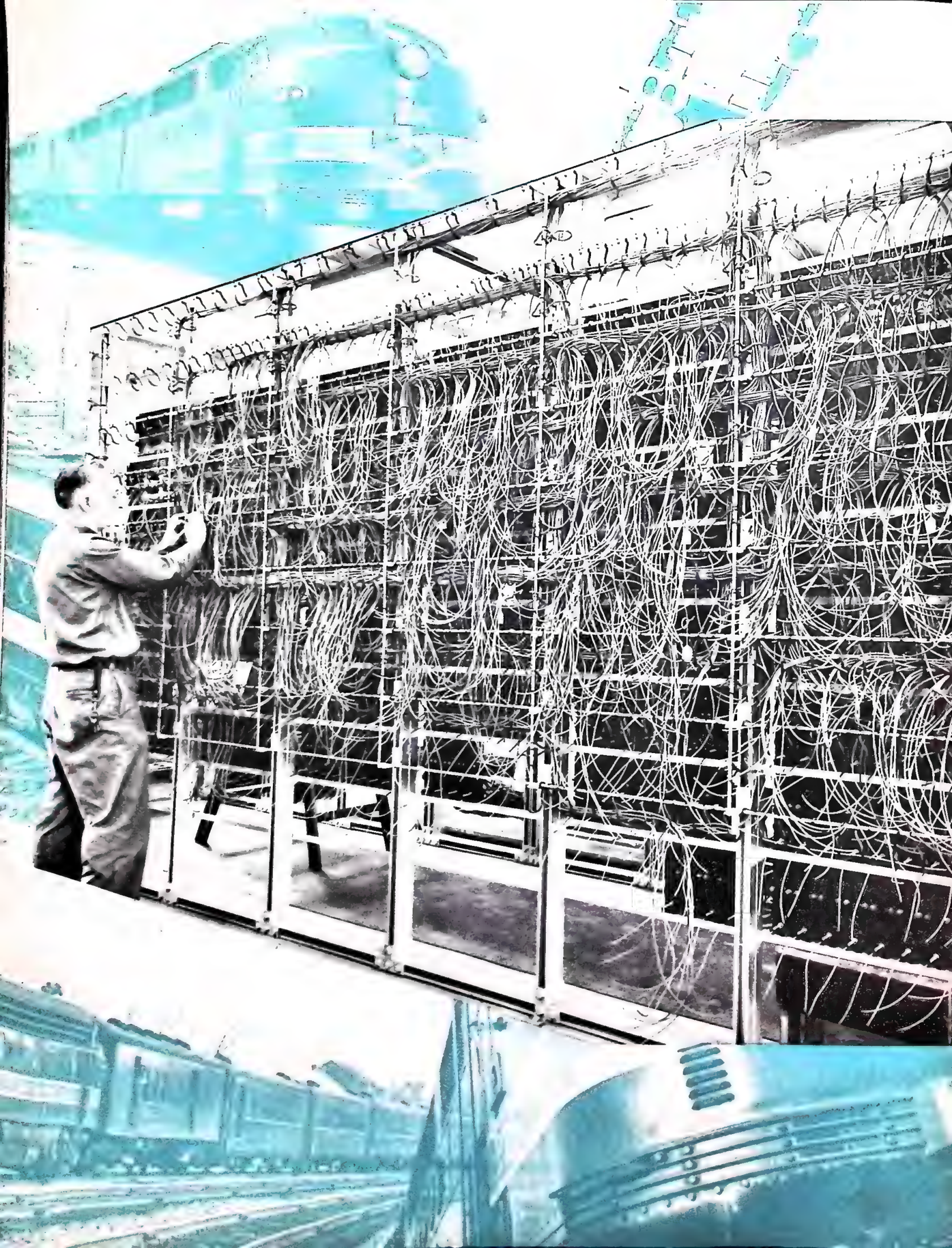
THROUGH YARDS

At modern Rutherford Yard, near Harrisburg, Pa., a towerman selects, by a flip of a lever, the tracks to which freight cars are to be routed for make-up into a new train, sets all switches for its movement, and retards the car to a proper speed, allowing it to roll smoothly to its destination in the yard. In "push button yards" such as these, cars are pushed over an artificial "hump," or elevated track segment, then roll by gravity down into a classification area, greatly increasing the speed and efficiency with which cars can be assembled and routed to destination. New developments are leading to the completely automatic operation of classification yards.



IN OFFICES

Electronics are used in railroad administration as well as operation. The Reading's electronic data-processing machine, for instance, handles a volume of detailed "paper work" formerly requiring hours of tedious sorting, checking and summarizing of data used in preparing payrolls, pay checks, distributing labor costs, compiling statistical reports and many other related jobs. Today, all details of preparing the Reading payroll, including printing of checks, are handled by this machine. And research now under way will lead to the much wider use of "electronic brains" in railroad accounting and statistical work.



THE FUTURE

Many things will affect the future of the railroads, but basic among them is the fact that the principle of the flanged wheel on the steel rail, by which long strings of cars may be pulled by a unit or units of motive power, is unparalleled in over-all economy and efficiency.

This, coupled with forecasts of steady population growth and expansion of production to meet future requirements, makes obvious the continued need for the economical, mass transportation service which only railroads can perform.

Looking to their future, the railroads are enterprising, progressive and taking advantage of the results of technological research at an unprecedented pace.

Field of Electronics

The resulting progress in railroading is seen in many ways, but perhaps most dramatically in the field of electronics, which has touched on and improved virtually every phase of operation.

The application of electronics to railroading began in 1915 when the railroads adapted vacuum tubes to locomotive cab signals, the first industrial use of such tubes outside the communications field itself.

Since that time, railroads have made dramatic use of electronics in virtually every phase of their operations.

Already described have been the roles played by electronics in classification yards in moving trains over tracks and in railroad offices.

But these are only examples of far-reaching developments now in use or on the way.

Through electronic relays, locomotives can turn themselves on and off to retain engine heat while stored at remote points. Locomotives have been started, moved and stopped by radio.

Successful tests have been carried out on a device which can read and record numbers on freight cars, an essential railroad operation, while trains are moving as fast as 60 miles per hour.

Electronic "hot box" detectors automatically record and report over-heated journals on passing trains.

Supersonic devices check the internal structure of rail, giving a regular report on its safety.

The microwave is bringing improved communications and television is furnishing additional eyes for many railroad operations.

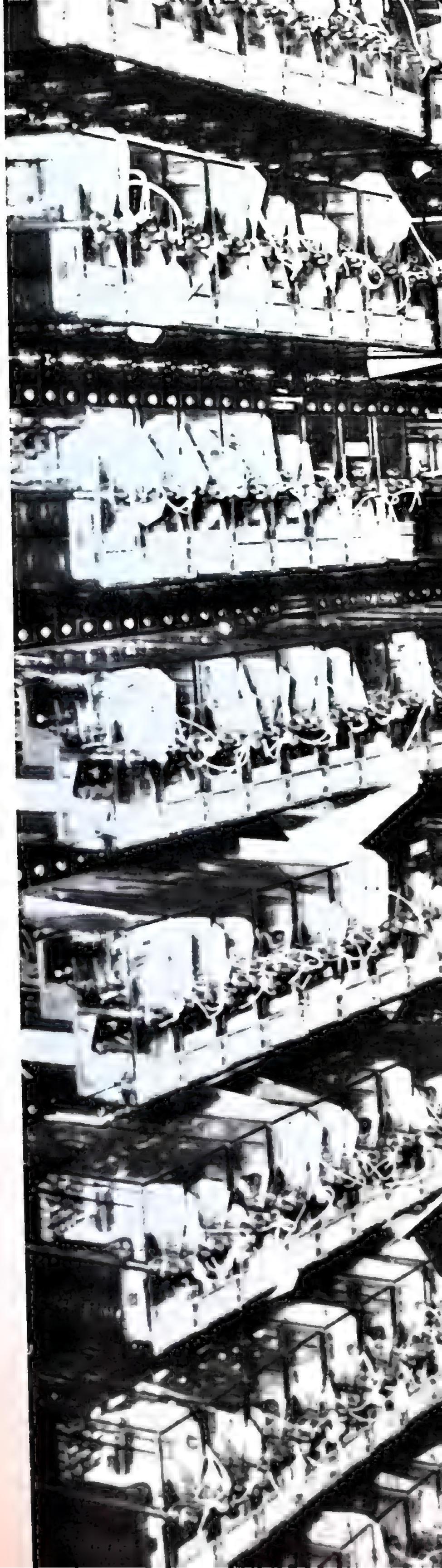
Many New Developments

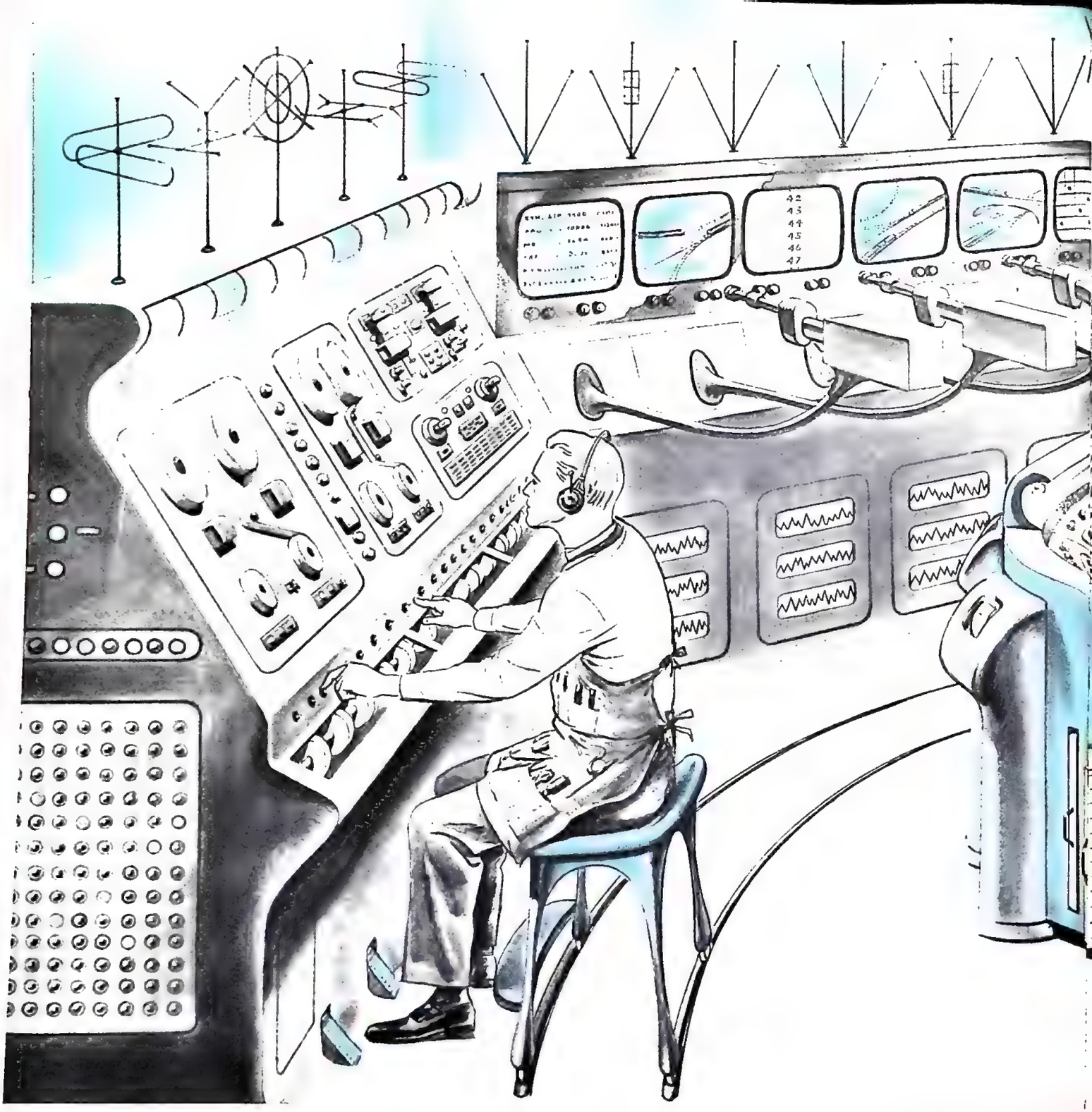
The list goes on and on, for electronics has brought new developments on myriad fronts.

But more importantly, electronics has opened the door to unlimited opportunities for future railroad progress.

Even a cursory listing of some of the things being accomplished gives an indication of what may lie ahead.

Because of the rapid advances made in the "electronic era" of railroading, and the potentialities in plans of things to come, there is every indication that the time is approaching when large segments of a railroad can be controlled from one central point.





New Concept in Remote Operation

In today's modern railroad there exist the basic elements for virtual automatic control of many major functions combining to provide faster, more efficient movement of freight and passengers.

As pointed out, train movements can be controlled remotely over tracks and through complex yards, for instance. Cars can be classified automatically in yards. Electronic brains maintain statistical information on administrative operations.

The "missing link" between today and tomorrow has been described as a "master brain," an electronically controlled system which can co-ordinate and control the automation now available.

Such a system would line the electronic brains of operation with those of operation into a master computer which could direct, control, record and report an over-all operation from a central point.

The drawing above is one conception of how such a master control center of the future might look. It has been emphasized that the drawing is not a plan, not a proposal, but merely an imaginative concept.

The "co-ordinator" or "director of programming" is seated at the console. He would pattern and review operation of trains and related records.

An operation is begun by the insertion of a coded program sequence into the slots at the left side of the control panel. This is the heart of the entire operation.

These coded programs are set up to carry out train operations in proper sequence and at the right time.

The program could direct movements in the classi-

fication yard where trains are made up, and set switches and signals to final destination.

At the same time, other parts of the program sequence would be forwarding information for handling tariffs, accounting procedures and division of revenues.

In the center panel are television screens—containing pictures of strategic track locations and figures.

Over these an operator could view a particular train as it passes a camera.

The television cameras aimed at the screens could either make a film reference, or record statistical data on magnetic tapes, which would move to transportation and accounting offices for further processing.

On both the left and right sides of the panel are magnetic tapes which carry out preset instructions.

Varied antennae at the top of the panel are directional and preset for the type of electronic equipment they serve.

The operator also has a small antenna on his head to indicate his communications are by microwave.

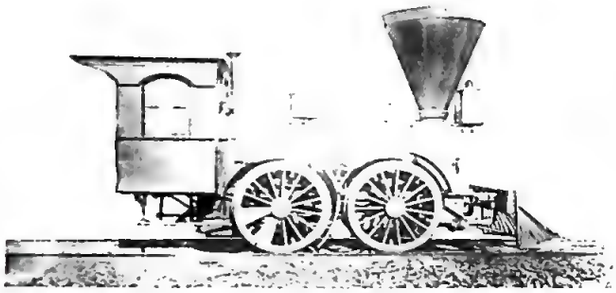
The light panel at the operator's left indicates the program sequences in operation at the moment.

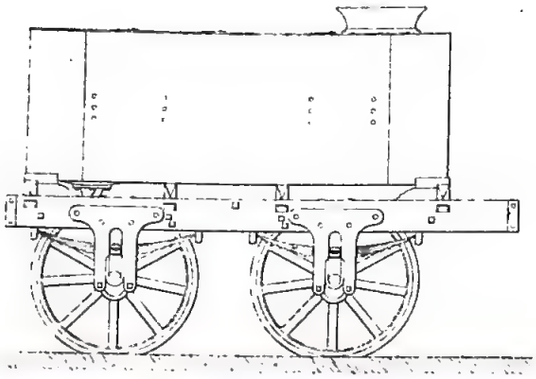
Oscillating graphs at the bottom of the panel chart the operation of vital electrical circuits.

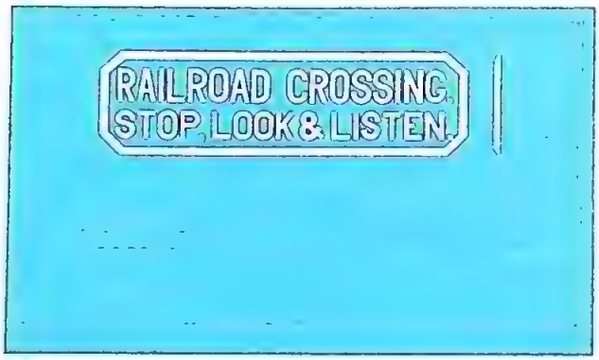
The maintenance man at the left, seated on a rail chair, keeps an alert eye on components of the machine.

While there are some unanswered questions in this drawing, it indicates the kind of progress railroads have made—for many elements in this machine exist today. And it promises a future which can keep pace with that of any other industry.

FIRSTS







1832 *Old Ironsides:* First Matthias Baldwin locomotive. It began operations over the Philadelphia, Germantown and Norristown Railroad on November 23.

1833 The first regular transportation of anthracite by steam power was made over the line of the Little Schuylkill Railroad.

1835 First tank car: cars with water-carrying tanks were used on the inclined planes of the Danville and Pottsville Railroad.

1837 Third railroad tunnel in the United States. The Reading constructed a tunnel at Black Rock, near Phoenixville, 1,932 feet long, at that time the longest tunnel in the United States.

1838 First regular steam passenger service in the interior of Pennsylvania. The Reading to Pottstown run, first made on May 1, began operation of daily schedules on July 16.

1842 First all-rail link between the coal regions of Pennsylvania and the Delaware River. On May 17, the Reading opened, from Pottsville to Port Richmond, a distance of ninety-three miles.

1843 First iron coal car, conceived and ordered by Reading engineers to replace the fragile five-ton wooden coal cars.

1844 First railroad in the United States to transport one million tons a year.

1845 First iron railroad bridge in the United States. Designed and built under the supervision of Richard B. Osborne, the bridge served on the main line of the Reading until 1901.

1847 First ten-wheel locomotive in the United States. The 4-6-0 *Chesapeake* was constructed by the Norris Locomotive Works.

1861 First armored car: Reading engineer, Rufus Wilder, designed the car to aid in the defense of Washington during the Civil War.

1869 First railroad in the United States to operate its own maritime fleet of coal vessels.

1871 Largest corporation in the world. After affiliation with the Philadelphia and Reading Coal and Iron Company, and development of its own shipyards, the Reading had a gross valuation of $170,000,000.

1877 The first camel-back locomotive. Manufactured by John E. Wootten, at the Reading shops, *#412* was sent to the Paris Exhibition of 1878 and was there altered to suit low clearance conditions of the Northern Railway of France, thereby giving it its peculiar "camel-back" shape.

1883 First railroad to light one of its stations with electricity. Meters were installed at Sunbury Station adjacent to the Edison power plant on April 10.

1884 First railroad to use the famous slogan—"Stop, Look and Listen."

1926 First railroad in Pennsylvania, and second in the United States, to purchase a diesel locomotive.

1930 First Eastern railroad to announce plans for a streamlined train, the *Crusader*.

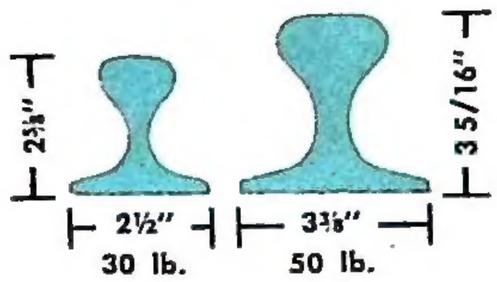
1891 First railroad in the United States to achieve a regularly scheduled "mile-a-minute" run, on its high-speed line from Philadelphia to New York.

1945 First railroad to use space radio for traffic control. Service was installed on an experimental basis at Wayne Junction.

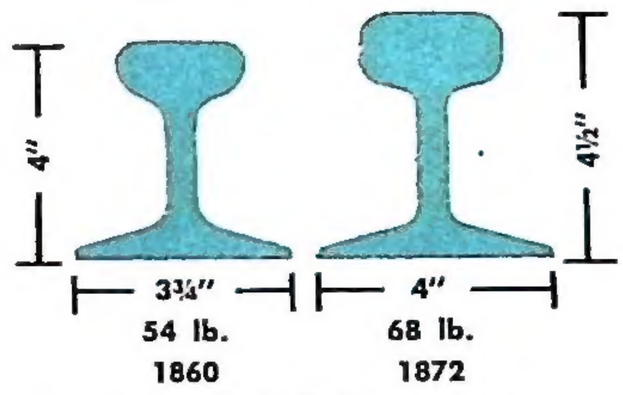
MORE THAN A CENTURY OF READING RAIL DEVELOPMENT

The history of the development of American railroads and the steel industry is graphically portrayed on this page. The first "rails" used on the Reading, long before locomotives operated in the Western Hemisphere, were simply wooden planks over which crude cars were pulled by horses, mules, or men. Later, to preserve the wood, thin bands of iron were employed and from this slowly emerged the cast iron rail.

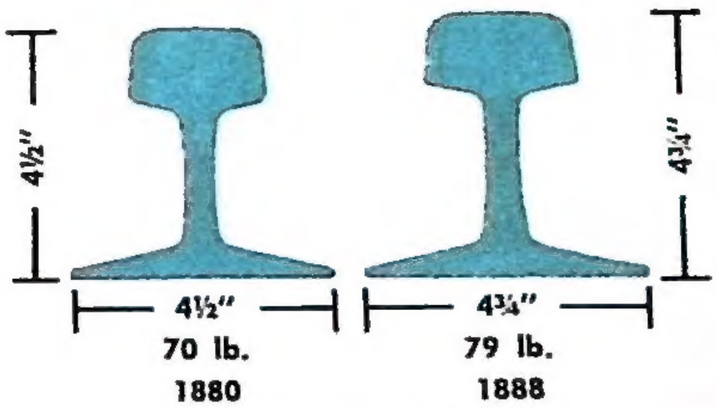
The Reading was one of the first railroads in America to import British iron rail about 1830. It was the first railroad to begin manufacturing its own iron rail and among the first to purchase the heavier Bessemer steel rails, which were introduced about 1880. Open-hearth steel-iron became generally used about 1900, and two decades later, the modern controlled, cooled and hardened steel came into use.



Iron Rails Rolled in England

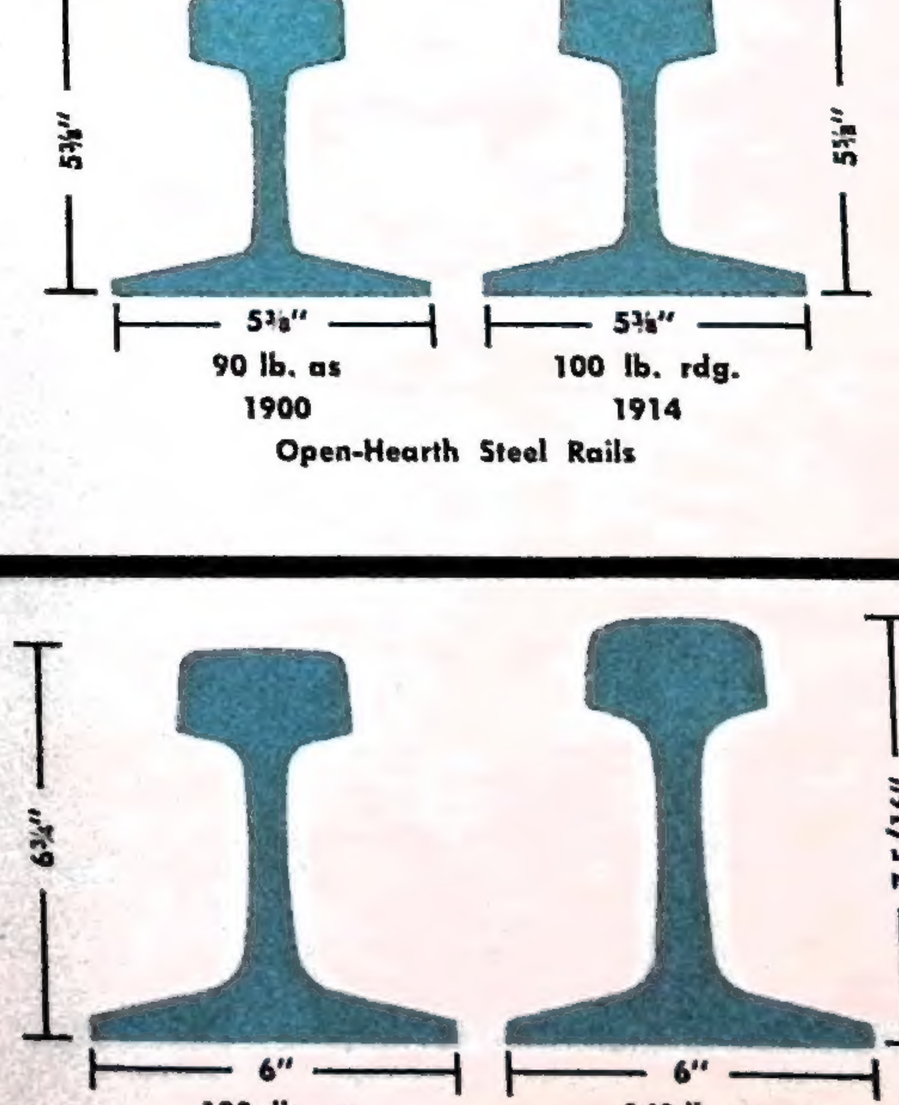


Iron Rails Rolled in America



Bessemer Steel Rails

Open-Hearth Steel Rails



Open-Hearth Steel Rails
(Control Cooled—Ends Hardened)

Full size cross-section of 1833 rail compared to today's rail.

This book has been prepared in order that those who ride or ship on the Reading, those in the communities we serve, and those who work for the railroad might have an opportunity to examine the past, see us as we are today and share our views of tomorrow.

Just as a shopkeeper profits by taking stock, so, too, we have profited from this study of the Reading as an essential partner in Pennsylvania's growth. Our communities, the industries that have produced our high standard of living, and the Reading Railroad have shared a unique experience for over a century and a quarter.

We look forward to a future in which our common interests are even more deeply shared, and our common goals even more earnestly sought. The Reading looks and builds ahead for a modern transportation system, just as the pioneers of 1833 looked ahead to the building of a greater America.

President

April 4, 1958

Reading
Lines